

# Computer Algebra Independent Integration Tests

Summer 2023 edition

4-Trig-functions/4.2-Cosine/97-4.2.9-trig<sup>m</sup>-a+b-cos<sup>n</sup>+c-cos<sup>-2-n</sup>-  
<sup>p</sup>

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# CHAPTER 1

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## INTRODUCTION

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This report gives the result of running the computer algebra independent integration test. The download section in on the main webpage contains links to download the problems in plain text format used for all CAS systems. The number of integrals in this report is [ 20 ]. This is test number [ 97 ].

## 1.1 Listing of CAS systems tested

The following are the CAS systems tested:

1. Mathematica 13.3.1 (August 16, 2023) on windows 10.
2. Rubi 4.16.1 (Dec 19, 2018) on Mathematica 13.3 on windows 10
3. Maple 2023.1 (July, 12, 2023) on windows 10.
4. Maxima 5.47 (June 1, 2023) using Lisp SBCL 2.3.0 on Linux via sagemath 10.1 (Aug 20, 2023).
5. FriCAS 1.3.9 (July 8, 2023) based on sbcl 2.3.0 on Linux via sagemath 10.1 (Aug 20, 2023).
6. Giac/Xcas 1.9.0-57 (June 26, 2023) on Linux via sagemath 10.1 (Aug 20, 2023).
7. Sympy 1.12 (May 10, 2023) Using Python 3.11.3 on Linux.
8. Mupad using Matlab 2021a with Symbolic Math Toolbox Version 8.7 on windows 10.

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

Sympy was run directly in Python not via sagemath.

## 1.2 Results

Important note: A number of problems in this test suite have no antiderivative in closed form. This means the antiderivative of these integrals can not be expressed in terms of elementary, special functions or `Hypergeometric2F1` functions. `RootSum` and `RootOf` are not allowed. If a CAS returns the above integral unevaluated within the time limit, then the result is counted as passed and assigned an A grade.

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

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

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

System	% solved	% Failed
Rubi	100.00 ( 20 )	0.00 ( 0 )
Mathematica	100.00 ( 20 )	0.00 ( 0 )
Maple	100.00 ( 20 )	0.00 ( 0 )
Mupad	100.00 ( 20 )	0.00 ( 0 )
Giac	100.00 ( 20 )	0.00 ( 0 )
Fricas	95.00 ( 19 )	5.00 ( 1 )
Sympy	25.00 ( 5 )	75.00 ( 15 )
Maxima	20.00 ( 4 )	80.00 ( 16 )

Table 1.1: Percentage solved for each CAS

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

grade	description
A	Integral was solved and antiderivative is optimal in quality and leaf size.
B	Integral was solved and antiderivative is optimal in quality but leaf size is larger than twice the optimal antiderivatives leaf size.
C	Integral was solved and antiderivative is non-optimal in quality. This can be due to one or more of the following reasons <ol style="list-style-type: none"> <li>1. antiderivative contains a hypergeometric function and the optimal antiderivative does not.</li> <li>2. antiderivative contains a special function and the optimal antiderivative does not.</li> <li>3. antiderivative contains the imaginary unit and the optimal antiderivative does not.</li> </ol>
F	Integral was not solved. Either the integral was returned unevaluated within the time limit, or it timed out, or CAS hanged or crashed or an exception was raised.

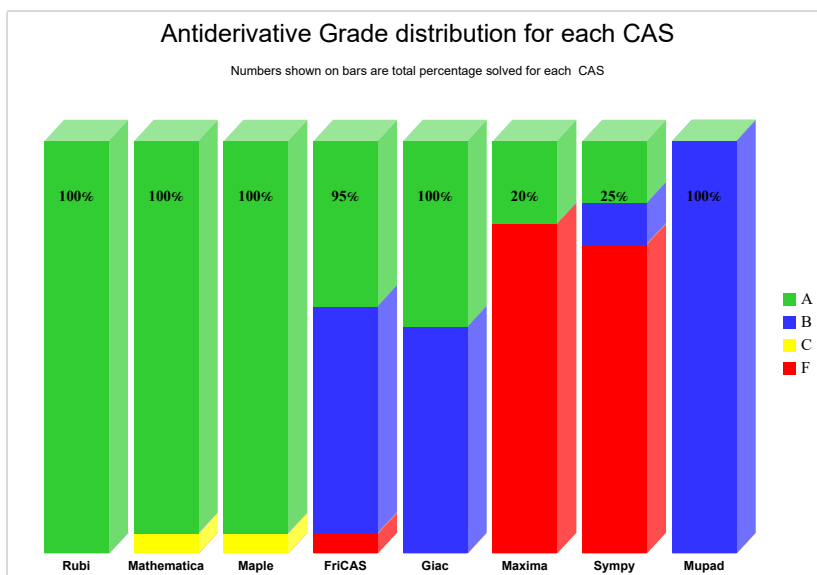
Table 1.2: Description of grading applied to integration result

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

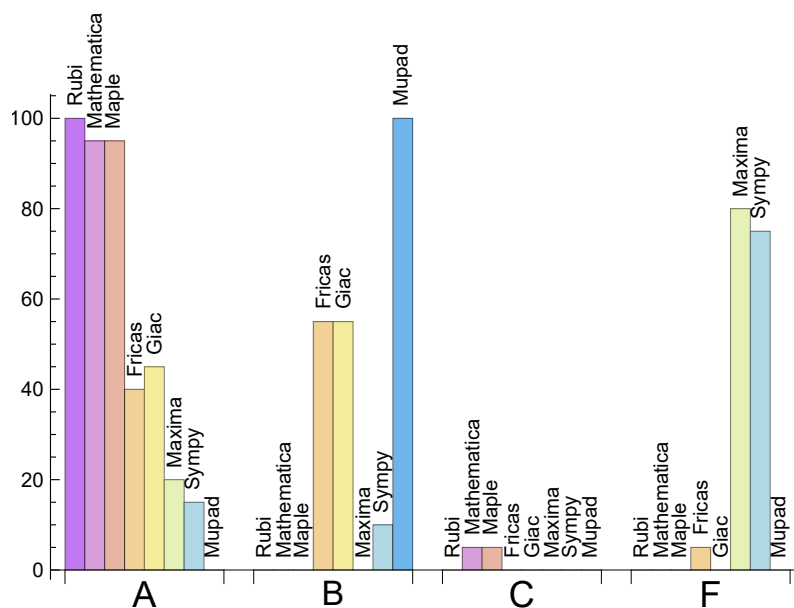
System	% A grade	% B grade	% C grade	% F grade
Rubi	100.000	0.000	0.000	0.000
Mathematica	95.000	0.000	5.000	0.000
Maple	95.000	0.000	5.000	0.000
Giac	45.000	55.000	0.000	0.000
Fricas	40.000	55.000	0.000	5.000
Maxima	20.000	0.000	0.000	80.000
Sympy	15.000	10.000	0.000	75.000
Mupad	0.000	100.000	0.000	0.000

Table 1.3: Antiderivative Grade distribution of each CAS

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



The figure below compares the grades of the CAS systems.



The following table shows the distribution of the different types of failures for each CAS. There are 3 types failures. The first is when CAS returns the input within the time limit, which means it could not solve it. This is the typical failure and given as **F**.

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

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

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

System	Number failed	Percentage normal failure	Percentage time-out failure	Percentage exception failure
Rubi	0	0.00	0.00	0.00
Mathematica	0	0.00	0.00	0.00
Maple	0	0.00	0.00	0.00
Mupad	0	0.00	0.00	0.00
Giac	0	0.00	0.00	0.00
Fricas	1	0.00	100.00	0.00
Sympy	15	40.00	60.00	0.00
Maxima	16	68.75	0.00	31.25

Table 1.4: Failure statistics for each CAS

## 1.3 Time and leaf size Performance

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

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

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

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

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

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



System	Mean time (sec)
Maxima	0.40
Sympy	0.42
Mathematica	0.76
Giac	1.54
Rubi	1.95
Maple	2.74
Mupad	10.07
Fricas	18.75

Table 1.5: Time performance for each CAS

System	Mean size	Normalized mean	Median size	Normalized median
Maxima	18.25	0.73	15.00	0.75
Sympy	54.20	1.76	26.00	1.37
Rubi	191.95	1.00	226.50	1.00
Maple	212.45	1.04	206.00	1.04
Mathematica	220.15	1.16	238.50	1.03
Fricas	3421.79	12.61	1991.00	9.71
Giac	4964.45	16.93	2983.50	13.18
Mupad	15358.45	51.12	5501.00	24.29

Table 1.6: Leaf size performance for each CAS

## 1.4 Performance based on number of rules Rubi used

This section shows how each CAS performed based on the number of rules Rubi needed to solve the same integral. One diagram is given for each CAS.

On the  $y$  axis is the percentage solved which Rubi itself needed the number of rules given the  $x$  axis. These plots show that as more rules are needed then most CAS system percentage of solving decreases which indicates the integral is becoming more complicated to solve.

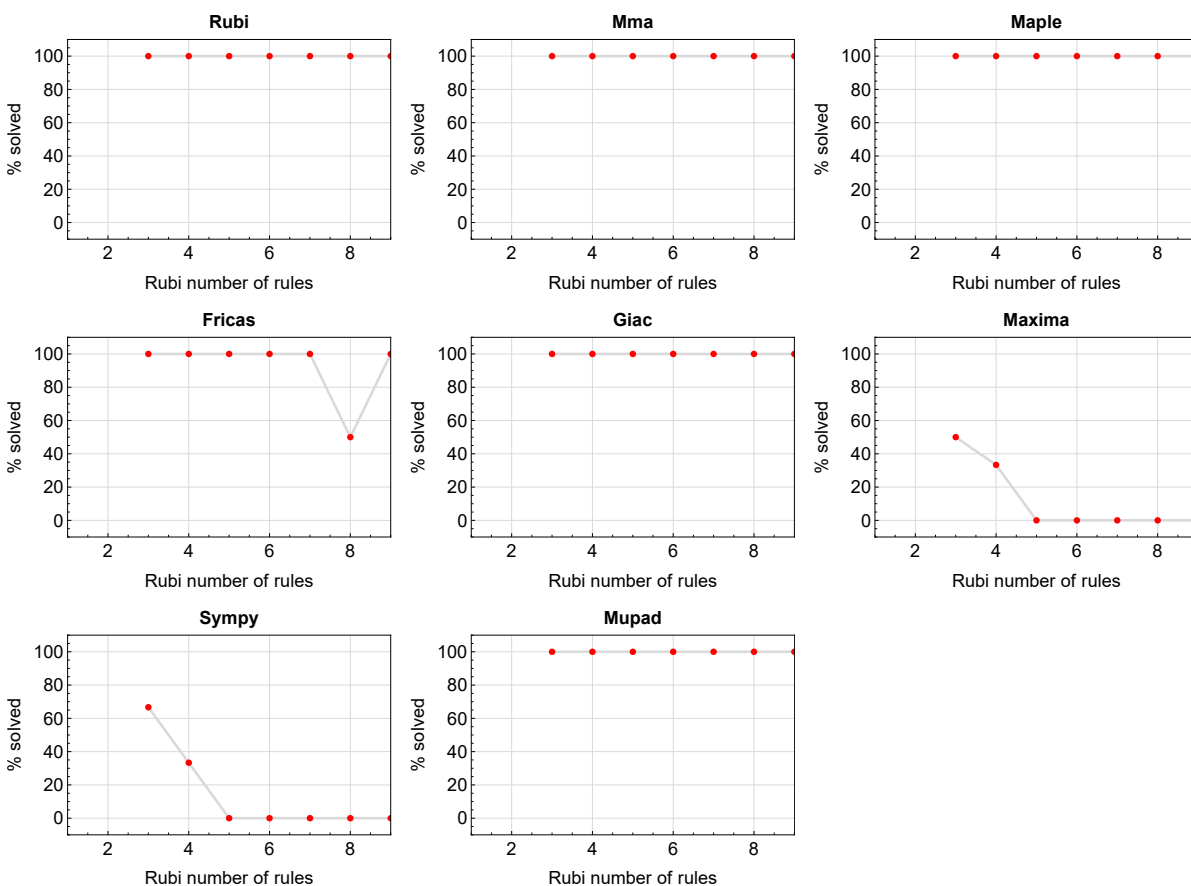


Figure 1.1: Solving statistics per number of Rubi rules used

## 1.5 Performance based on number of steps Rubi used

This section shows how each CAS performed based on the number of steps Rubi needed to solve the same integral. Note that the number of steps Rubi needed can be much higher than the number of rules, as the same rule could be used more than once.

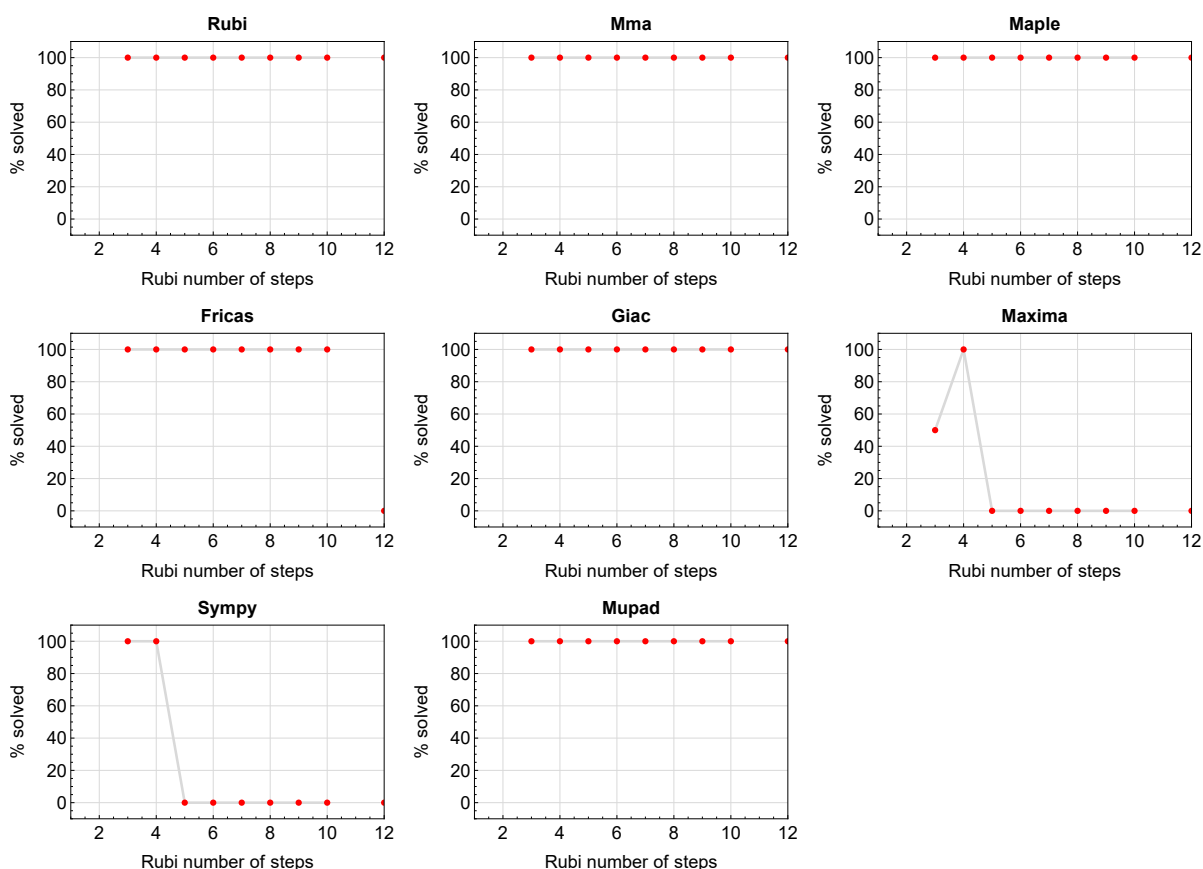


Figure 1.2: Solving statistics per number of Rubi steps used

The above diagram shows that the percentage of solved integrals decreases for most CAS systems as the number of steps increases. As expected, for integrals that required less steps by Rubi, CAS systems had more success which indicates the integral was not as hard to solve. As Rubi needed more steps to solve the integral, the solved percentage decreased for most CAS systems which indicates the integral is becoming harder to solve.

## 1.6 Solved integrals histogram based on leaf size of result

The following shows the distribution of solved integrals for each CAS system based on leaf size of the antiderivatives produced by each CAS. It shows that most integrals solved produced leaf size less than about 100 to 150. The bin size used is 40.

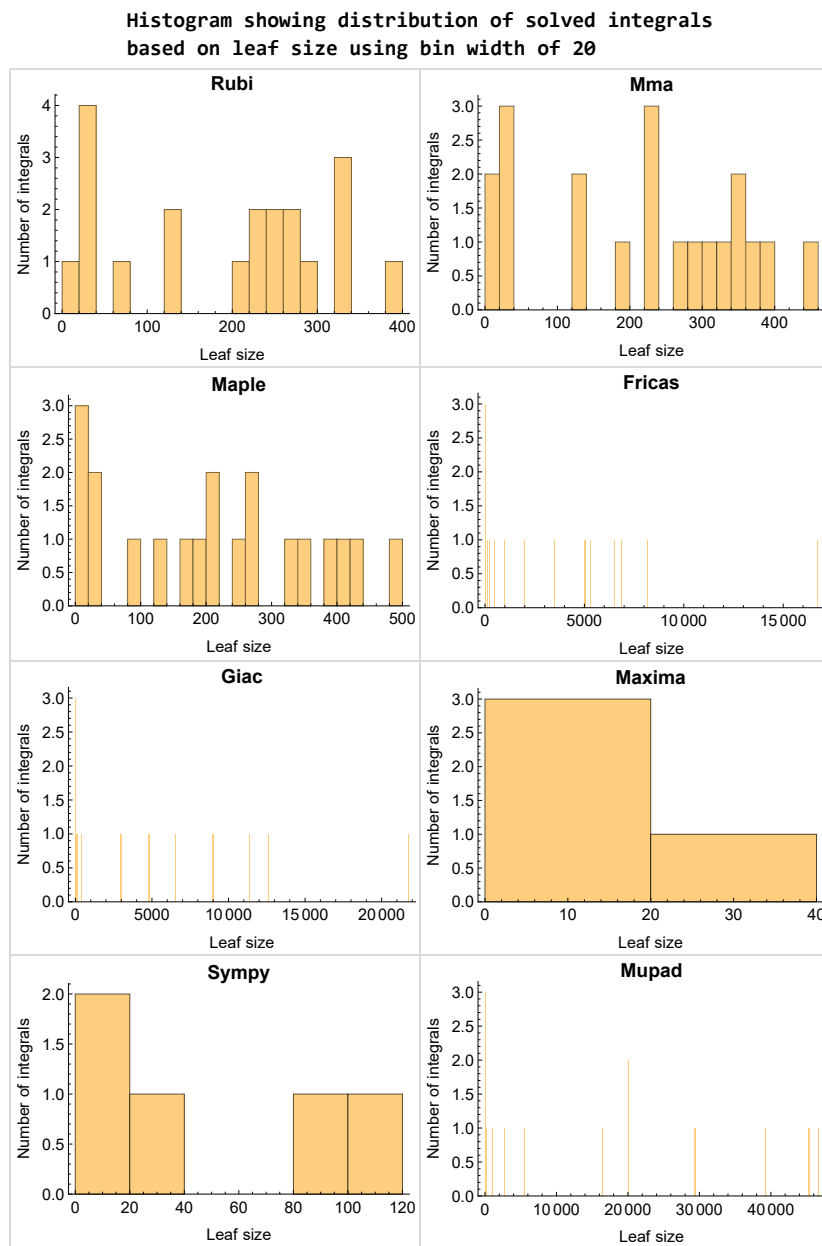


Figure 1.3: Solved integrals based on leaf size distribution

## 1.7 Solved integrals histogram based on CPU time used

The following shows the distribution of solved integrals for each CAS system based on CPU time used in seconds. The bin size used is 0.1 second.

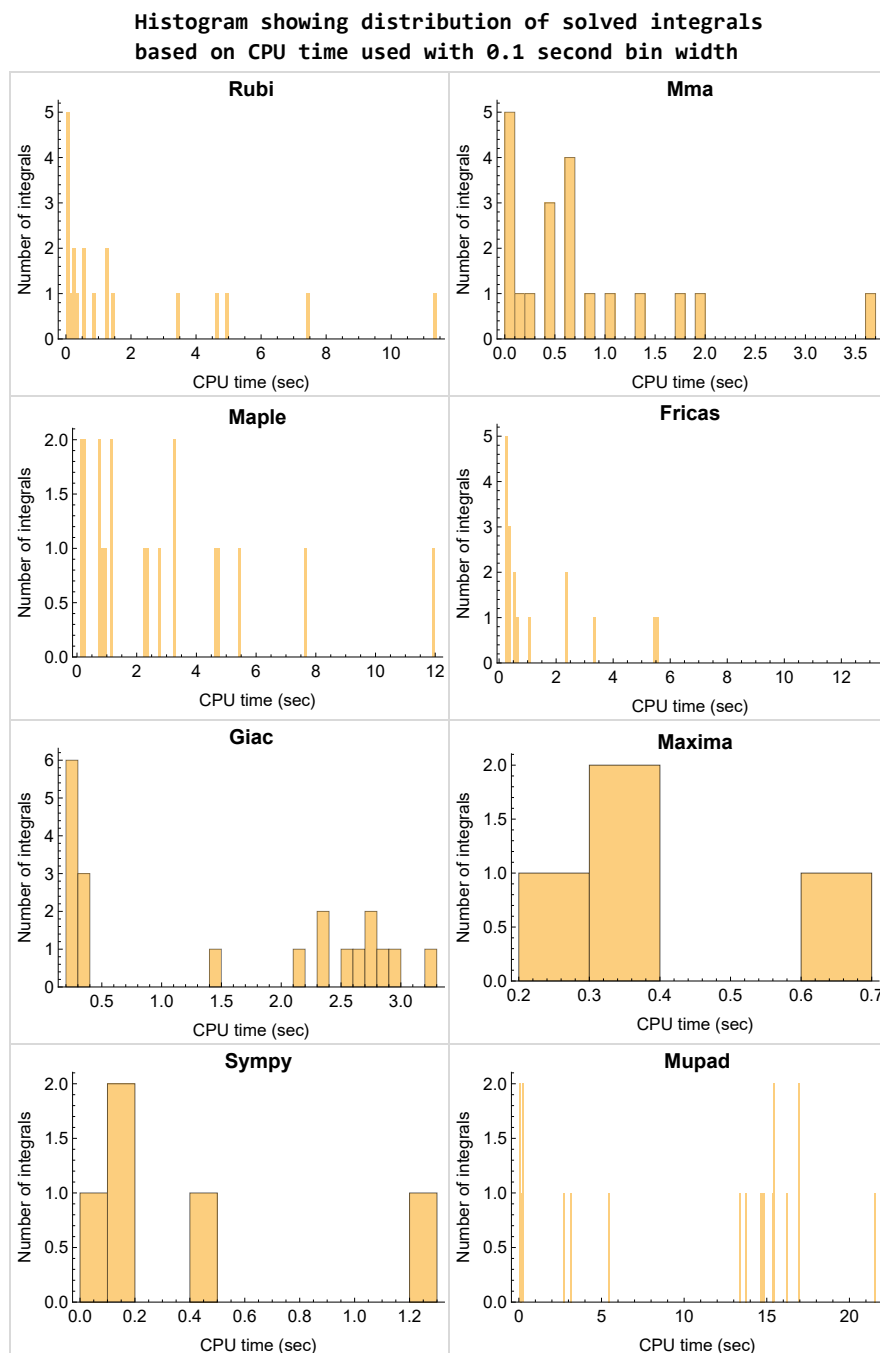


Figure 1.4: Solved integrals histogram based on CPU time used

## 1.8 Leaf size vs. CPU time used

The following shows the relation between the CPU time used to solve an integral and the leaf size of the antiderivative.

The result for Fricas, Maxima and Giac is shifted more to the right than the other CAS system due to the use of sagemath to call them, which causes an initial slight delay in the timing to start the integration due to overhead of starting a new process each time. This should also be taken into account when looking at the timing of these three CAS systems. Direct calls not using sagemath would result in faster timings, but current implementation uses sagemath as this makes testing much easier to do.

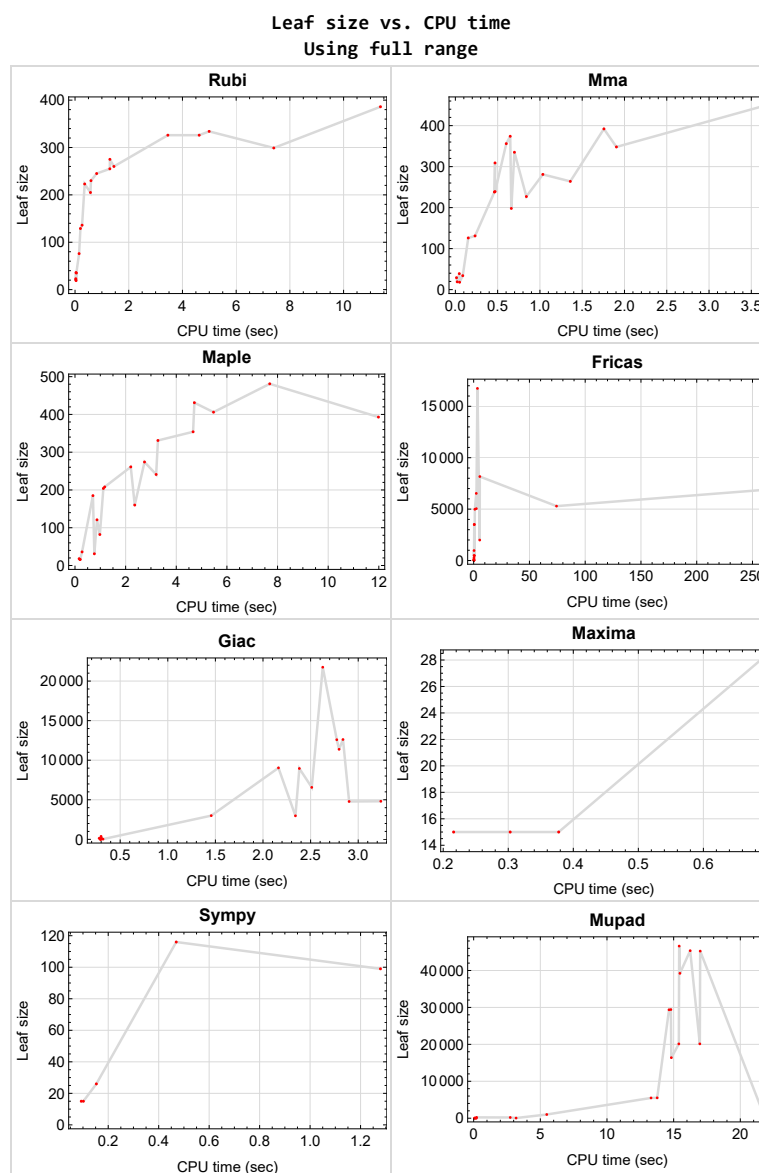


Figure 1.5: Leaf size vs. CPU time. Full range

## 1.9 list of integrals with no known antiderivative

{}

## 1.10 List of integrals solved by CAS but has no known antiderivative

**Rubi** {}

**Mathematica** {}

**Maple** {}

**Maxima** {}

**Fricas** {}

**Sympy** {}

**Giac** {}

**Mupad** {}

## 1.11 list of integrals solved by CAS but failed verification

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

**Rubi** {}

**Mathematica** {}

**Maple** {}

**Maxima** Verification phase not currently implemented.

**Fricas** Verification phase not currently implemented.

**Sympy** Verification phase not currently implemented.

**Giac** Verification phase not currently implemented.

**Mupad** Verification phase not currently implemented.

## 1.12 Timing

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

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

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

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

## 1.13 Verification

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

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

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

## 1.14 Important notes about some of the results

### Important note about Maxima results

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

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

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

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



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

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

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

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

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

## Important note about FriCAS result

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

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

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

## Important note about finding leaf size of antiderivative

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

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

```
def tree_size(expr):
    r"""
    Return the tree size of this expression.
    """
    if expr not in SR:
        # deal with lists, tuples, vectors
        return 1 + sum(tree_size(a) for a in expr)
    expr = SR(expr)
```

```
x, aa = expr.operator(), expr.operands()
if x is None:
    return 1
else:
    return 1 + sum(tree_size(a) for a in aa)
```

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

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

except Exception as ee:
    leafCount =1
```

## Important note about Mupad results

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

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

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

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

Which gives  $\sin(x)^2/2$

## 1.15 Design of the test system

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



### High level overview of the CAS independent integration test build system

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

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

The following fields are present only in Rubi Table file

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

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June 27, 2023  
Design-vide



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## CHAPTER 2

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### DETAILED SUMMARY TABLES OF RESULTS

2.1	List of integrals sorted by grade for each CAS . . . . .	22
2.2	Detailed conclusion table per each integral for all CAS systems . . . . .	25
2.3	Detailed conclusion table specific for Rubi results . . . . .	30

## 2.1 List of integrals sorted by grade for each CAS

Rubi . . . . .	22
Mma . . . . .	22
Maple . . . . .	23
Fricas . . . . .	23
Maxima . . . . .	23
Giac . . . . .	23
Mupad . . . . .	24
Sympy . . . . .	24

### Rubi

**A grade** { 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20 }

**B grade** { }

**C grade** { }

**F normal fail** { }

**F(-1) timedout fail** { }

**F(-2) exception fail** { }

### Mma

**A grade** { 1, 2, 3, 4, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20 }

**B grade** { }

**C grade** { 5 }

**F normal fail** { }

**F(-1) timedout fail** { }

**F(-2) exception fail** { }

## Maple

**A grade** { 1, 2, 3, 4, 5, 6, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20 }

**B grade** { }

**C grade** { 7 }

**F normal fail** { }

**F(-1) timeout fail** { }

**F(-2) exception fail** { }

## Fricas

**A grade** { 1, 2, 3, 4, 9, 10, 11, 12 }

**B grade** { 5, 6, 7, 8, 13, 14, 15, 16, 17, 18, 19 }

**C grade** { }

**F normal fail** { }

**F(-1) timeout fail** { 20 }

**F(-2) exception fail** { }

## Maxima

**A grade** { 9, 10, 11, 12 }

**B grade** { }

**C grade** { }

**F normal fail** { 6, 7, 8, 13, 14, 15, 16, 17, 18, 19, 20 }

**F(-1) timeout fail** { }

**F(-2) exception fail** { 1, 2, 3, 4, 5 }

## Giac

**A grade** { 1, 2, 3, 4, 5, 9, 10, 11, 12 }

**B grade** { 6, 7, 8, 13, 14, 15, 16, 17, 18, 19, 20 }

**C grade** { }

**F normal fail** { }

**F(-1) timeout fail** { }

**F(-2) exception fail** { }

## Mupad

**A grade** { }

**B grade** { 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20 }

**C grade** { }

**F normal fail** { }

**F(-1) timedout fail** { }

**F(-2) exception fail** { }

## Sympy

**A grade** { 9, 10, 11 }

**B grade** { 3, 12 }

**C grade** { }

**F normal fail** { 4, 5, 8, 18, 19, 20 }

**F(-1) timedout fail** { 1, 2, 6, 7, 13, 14, 15, 16, 17 }

**F(-2) exception fail** { }



## 2.2 Detailed conclusion table per each integral for all CAS systems

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

In this table, the column **N.S.** means **normalized size** and is defined as  $\frac{\text{antiderivative leaf size}}{\text{optimal antiderivative leaf size}}$ . To make the table fit the page, the name **Mathematica** was abbreviated to **MMA**.

Problem 1	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	<b>F(-2)</b>	A	<b>F(-1)</b>	A	B
verified	N/A	Yes	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	136	136	239	160	0	491	0	153	197
N.S.	1	1.00	1.76	1.18	0.00	3.61	0.00	1.12	1.45
time (sec)	N/A	0.263	0.470	2.360	0.000	0.356	0.000	0.303	2.743

Problem 2	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	<b>F(-2)</b>	A	<b>F(-1)</b>	A	B
verified	N/A	Yes	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	76	76	131	82	0	258	0	76	226
N.S.	1	1.00	1.72	1.08	0.00	3.39	0.00	1.00	2.97
time (sec)	N/A	0.152	0.233	0.982	0.000	0.308	0.000	0.303	0.219

Problem 3	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	<b>F(-2)</b>	A	B	A	B
verified	N/A	Yes	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	35	35	39	36	0	126	99	35	47
N.S.	1	1.00	1.11	1.03	0.00	3.60	2.83	1.00	1.34
time (sec)	N/A	0.049	0.046	0.279	0.000	0.274	1.279	0.298	3.183

Problem 4	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	<b>F(-2)</b>	A	<b>F</b>	A	B
verified	N/A	Yes	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	129	129	126	121	0	470	0	130	1003
N.S.	1	1.00	0.98	0.94	0.00	3.64	0.00	1.01	7.78
time (sec)	N/A	0.201	0.153	0.869	0.000	0.681	0.000	0.280	5.482

Problem 5	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	C	A	<b>F(-2)</b>	B	<b>F</b>	A	B
verified	N/A	Yes	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	205	205	392	241	0	1991	0	378	2742
N.S.	1	1.00	1.91	1.18	0.00	9.71	0.00	1.84	13.38
time (sec)	N/A	0.574	1.757	3.206	0.000	5.428	0.000	0.299	21.564

Problem 6	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	<b>F</b>	B	<b>F(-1)</b>	B	B
verified	N/A	Yes	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	388	386	374	406	0	5045	0	11375	46613
N.S.	1	0.99	0.96	1.05	0.00	13.00	0.00	29.32	120.14
time (sec)	N/A	11.373	0.649	5.471	0.000	2.397	0.000	2.799	15.415

Problem 7	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	C	<b>F</b>	B	<b>F(-1)</b>	B	B
verified	N/A	Yes	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	260	260	238	185	0	971	0	6566	16390
N.S.	1	1.00	0.92	0.71	0.00	3.73	0.00	25.25	63.04
time (sec)	N/A	1.448	0.462	0.709	0.000	0.343	0.000	2.512	14.827

Problem 8	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	<b>F</b>	B	<b>F</b>	B	B
verified	N/A	Yes	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	326	326	335	393	0	16741	0	21750	39229
N.S.	1	1.00	1.03	1.21	0.00	51.35	0.00	66.72	120.33
time (sec)	N/A	3.457	0.699	11.984	0.000	3.380	0.000	2.628	15.471

Problem 9	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	21	21	19	16	15	17	15	17	9
N.S.	1	1.00	0.90	0.76	0.71	0.81	0.71	0.81	0.43
time (sec)	N/A	0.028	0.022	0.195	0.216	0.246	0.093	0.299	0.200

Problem 10	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	23	23	29	16	15	19	15	19	9
N.S.	1	1.00	1.26	0.70	0.65	0.83	0.65	0.83	0.39
time (sec)	N/A	0.028	0.014	0.205	0.303	0.244	0.102	0.291	0.143

Problem 11	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	19	19	18	18	15	19	26	15	15
N.S.	1	1.00	0.95	0.95	0.79	1.00	1.37	0.79	0.79
time (sec)	N/A	0.038	0.050	0.165	0.378	0.244	0.153	0.292	0.068

Problem 12	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	B	A	B
verified	N/A	Yes	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	36	36	34	31	28	38	116	28	30
N.S.	1	1.00	0.94	0.86	0.78	1.06	3.22	0.78	0.83
time (sec)	N/A	0.036	0.087	0.765	0.688	0.254	0.470	0.320	0.075

Problem 13	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	<b>F</b>	B	<b>F(-1)</b>	B	B
verified	N/A	Yes	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	326	326	356	431	0	8167	0	12587	45364
N.S.	1	1.00	1.09	1.32	0.00	25.05	0.00	38.61	139.15
time (sec)	N/A	4.624	0.602	4.716	0.000	5.516	0.000	2.775	16.240

Problem 14	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	<b>F</b>	B	<b>F(-1)</b>	B	B
verified	N/A	Yes	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	299	299	309	331	0	6529	0	4810	29362
N.S.	1	1.00	1.03	1.11	0.00	21.84	0.00	16.09	98.20
time (sec)	N/A	7.401	0.469	3.276	0.000	2.349	0.000	3.237	14.653

Problem 15	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	<b>F</b>	B	<b>F(-1)</b>	B	B
verified	N/A	Yes	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	255	255	264	261	0	4983	0	9030	20133
N.S.	1	1.00	1.04	1.02	0.00	19.54	0.00	35.41	78.95
time (sec)	N/A	1.296	1.359	2.203	0.000	1.063	0.000	2.162	16.964

Problem 16	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	<b>F</b>	B	<b>F(-1)</b>	B	B
verified	N/A	Yes	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	230	230	227	208	0	3513	0	2973	5488
N.S.	1	1.00	0.99	0.90	0.00	15.27	0.00	12.93	23.86
time (sec)	N/A	0.594	0.840	1.173	0.000	0.568	0.000	2.341	13.304

Problem 17	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	<b>F</b>	B	<b>F(-1)</b>	B	B
verified	N/A	Yes	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	223	223	198	204	0	3493	0	2994	5514
N.S.	1	1.00	0.89	0.91	0.00	15.66	0.00	13.43	24.73
time (sec)	N/A	0.359	0.662	1.121	0.000	0.517	0.000	1.456	13.765

Problem 18	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	<b>F</b>	B	<b>F</b>	B	B
verified	N/A	Yes	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	245	245	281	274	0	5292	0	8954	20126
N.S.	1	1.00	1.15	1.12	0.00	21.60	0.00	36.55	82.15
time (sec)	N/A	0.805	1.035	2.746	0.000	74.287	0.000	2.382	15.389

Problem 19	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	<b>F</b>	B	<b>F</b>	B	B
verified	N/A	Yes	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	275	275	348	354	0	6851	0	4784	29417
N.S.	1	1.00	1.27	1.29	0.00	24.91	0.00	17.40	106.97
time (sec)	N/A	1.298	1.905	4.664	0.000	257.772	0.000	2.905	14.792

Problem 20	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	<b>F</b>	<b>F(-1)</b>	<b>F</b>	B	B
verified	N/A	Yes	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	334	334	446	481	0	0	0	12615	45255
N.S.	1	1.00	1.34	1.44	0.00	0.00	0.00	37.77	135.49
time (sec)	N/A	4.994	3.612	7.691	0.000	0.000	0.000	2.840	16.991

## 2.3 Detailed conclusion table specific for Rubi results

The following table is specific to Rubi only. It gives additional statistics for each integral. the column **steps** is the number of steps used by Rubi to obtain the antiderivative. The **rules** column is the number of unique rules used. The **integrand size** column is the leaf size of the integrand. Finally the ratio  $\frac{\text{number of rules}}{\text{integrand size}}$  is also given. The larger this ratio is, the harder the integral is to solve. In this test file, problem number [5] had the largest ratio of [.473700000000000010]

Table 2.1: Rubi specific breakdown of results for each integral

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
1	A	7	6	1.00	19	0.316
2	A	7	6	1.00	19	0.316
3	A	3	3	1.00	17	0.176
4	A	9	8	1.00	17	0.471
5	A	10	9	1.00	19	0.474
6	A	10	7	0.99	19	0.368
7	A	7	4	1.00	19	0.210
8	A	9	5	1.00	19	0.263
9	A	4	3	1.00	13	0.231
10	A	4	3	1.00	15	0.200
11	A	3	3	1.00	15	0.200
12	A	4	4	1.00	15	0.267
13	A	10	7	1.00	19	0.368
14	A	8	5	1.00	19	0.263
15	A	7	4	1.00	19	0.210
16	A	6	3	1.00	17	0.176
17	A	5	3	1.00	14	0.214
18	A	8	5	1.00	17	0.294
19	A	10	7	1.00	19	0.368
20	A	12	8	1.00	19	0.421

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# CHAPTER 3

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## LISTING OF INTEGRALS

3.1	$\int \frac{\sin^5(x)}{a+b \cos(x)+c \cos^2(x)} dx$	32
3.2	$\int \frac{\sin^3(x)}{a+b \cos(x)+c \cos^2(x)} dx$	38
3.3	$\int \frac{\sin(x)}{a+b \cos(x)+c \cos^2(x)} dx$	43
3.4	$\int \frac{\csc(x)}{a+b \cos(x)+c \cos^2(x)} dx$	47
3.5	$\int \frac{\csc^3(x)}{a+b \cos(x)+c \cos^2(x)} dx$	54
3.6	$\int \frac{\sin^4(x)}{a+b \cos(x)+c \cos^2(x)} dx$	64
3.7	$\int \frac{\sin^2(x)}{a+b \cos(x)+c \cos^2(x)} dx$	100
3.8	$\int \frac{\csc^2(x)}{a+b \cos(x)+c \cos^2(x)} dx$	119
3.9	$\int \frac{\sin(x)}{-2+\cos(x)+\cos^2(x)} dx$	157
3.10	$\int \frac{\sin(x)}{4-5 \cos(x)+\cos^2(x)} dx$	161
3.11	$\int \frac{\sin(x)}{3-2 \cos(x)+\cos^2(x)} dx$	165
3.12	$\int \frac{\sin(x)}{(13-4 \cos(x)+\cos^2(x))^2} dx$	169
3.13	$\int \frac{\cos^4(x)}{a+b \cos(x)+c \cos^2(x)} dx$	174
3.14	$\int \frac{\cos^3(x)}{a+b \cos(x)+c \cos^2(x)} dx$	209
3.15	$\int \frac{\cos^2(x)}{a+b \cos(x)+c \cos^2(x)} dx$	231
3.16	$\int \frac{\cos(x)}{a+b \cos(x)+c \cos^2(x)} dx$	254
3.17	$\int \frac{1}{a+b \cos(x)+c \cos^2(x)} dx$	265
3.18	$\int \frac{\sec(x)}{a+b \cos(x)+c \cos^2(x)} dx$	275
3.19	$\int \frac{\sec^2(x)}{a+b \cos(x)+c \cos^2(x)} dx$	296
3.20	$\int \frac{\sec^3(x)}{a+b \cos(x)+c \cos^2(x)} dx$	318

### 3.1 $\int \frac{\sin^5(x)}{a+b \cos(x)+c \cos^2(x)} dx$

Optimal result	32
Rubi [A] (verified)	32
Mathematica [A] (verified)	34
Maple [A] (verified)	35
Fricas [A] (verification not implemented)	35
Sympy [F(-1)]	36
Maxima [F(-2)]	36
Giac [A] (verification not implemented)	36
Mupad [B] (verification not implemented)	37

#### Optimal result

Integrand size = 19, antiderivative size = 136

$$\int \frac{\sin^5(x)}{a+b \cos(x)+c \cos^2(x)} dx = \frac{(b^4 + 2c^2(a+c)^2 - 2b^2c(2a+c)) \operatorname{arctanh}\left(\frac{b+2c \cos(x)}{\sqrt{b^2-4ac}}\right)}{c^4 \sqrt{b^2-4ac}} - \frac{(b^2 - c(a+2c)) \cos(x)}{c^3} + \frac{b \cos^2(x)}{2c^2} - \frac{\cos^3(x)}{3c} + \frac{b(b^2 - 2c(a+c)) \log(a+b \cos(x)+c \cos^2(x))}{2c^4}$$

[Out]  $-(b^2-c*(a+2*c))*\cos(x)/c^3+1/2*b*\cos(x)^2/c^2-1/3*\cos(x)^3/c+1/2*b*(b^2-2*c*(a+c))*\ln(a+b*\cos(x)+c*\cos(x)^2)/c^4+(b^4+2*c^2*(a+c)^2-2*b^2*c*(2*a+c))*\operatorname{arctanh}((b+2*c*\cos(x))/(-4*a*c+b^2)^(1/2))/c^4/(-4*a*c+b^2)^(1/2)$

#### Rubi [A] (verified)

Time = 0.26 (sec) , antiderivative size = 136, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6,  $\frac{\text{number of rules}}{\text{integrand size}} = 0.316$ , Rules used = {3340, 1671, 648, 632, 212, 642}

$$\int \frac{\sin^5(x)}{a+b \cos(x)+c \cos^2(x)} dx = \frac{(-2b^2c(2a+c) + 2c^2(a+c)^2 + b^4) \operatorname{arctanh}\left(\frac{b+2c \cos(x)}{\sqrt{b^2-4ac}}\right)}{c^4 \sqrt{b^2-4ac}} + \frac{b(b^2 - 2c(a+c)) \log(a+b \cos(x)+c \cos^2(x))}{2c^4} - \frac{\cos(x)(b^2 - c(a+2c))}{c^3} + \frac{b \cos^2(x)}{2c^2} - \frac{\cos^3(x)}{3c}$$

[In]  $\text{Int}[\text{Sin}[x]^5/(a + b*\text{Cos}[x] + c*\text{Cos}[x]^2), x]$



```
[Out] ((b^4 + 2*c^2*(a + c)^2 - 2*b^2*c*(2*a + c))*ArcTanh[(b + 2*c*Cos[x])/Sqrt[
b^2 - 4*a*c]]/(c^4*Sqrt[b^2 - 4*a*c]) - ((b^2 - c*(a + 2*c))*Cos[x])/c^3 +
(b*Cos[x]^2)/(2*c^2) - Cos[x]^3/(3*c) + (b*(b^2 - 2*c*(a + c))*Log[a + b*C
os[x] + c*Cos[x]^2])/(2*c^4)
```

#### Rule 212

```
Int[((a_) + (b_)*(x_)^2)^(-1), x_Symbol] := Simp[(1/(Rt[a, 2]*Rt[-b, 2]))*
ArcTanh[Rt[-b, 2]*(x/Rt[a, 2])], x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

#### Rule 632

```
Int[((a_) + (b_)*(x_) + (c_)*(x_)^2)^(-1), x_Symbol] := Dist[-2, Subst[Int
[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

#### Rule 642

```
Int[((d_) + (e_)*(x_))/((a_) + (b_)*(x_) + (c_)*(x_)^2), x_Symbol] := S
imp[d*(Log[RemoveContent[a + b*x + c*x^2, x]]/b), x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

#### Rule 648

```
Int[((d_) + (e_)*(x_))/((a_) + (b_)*(x_) + (c_)*(x_)^2), x_Symbol] := D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] && !NiceSqrtQ[b^2 - 4*a*c]
```

#### Rule 1671

```
Int[(Pq)*((a_) + (b_)*(x_) + (c_)*(x_)^2)^(p_), x_Symbol] := Int[Expand
Integrand[Pq*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c}, x] && PolyQ[Pq
, x] && IGtQ[p, -2]
```

#### Rule 3340

```
Int[((a_) + (b_)*(cos[(d_) + (e_)*(x_)])*(f_))^(n_) + (c_)*(cos[(d_)
+ (e_)*(x_)])*(f_))^(n2_))^(p_)*sin[(d_) + (e_)*(x_)]^(m_), x_Symbol
] := Module[{g = FreeFactors[Cos[d + e*x], x]}, Dist[-g/e, Subst[Int[(1 - g
^2*x^2)^((m - 1)/2)*(a + b*(f*g*x)^n + c*(f*g*x)^(2*n))^p, x], x, Cos[d + e
*x]/g], x] /; FreeQ[{a, b, c, d, e, f, n, p}, x] && EqQ[n2, 2*n] && Intege
rQ[(m - 1)/2]
```

Rubi steps

$$\begin{aligned}
\text{integral} &= -\text{Subst}\left(\int \frac{(1-x^2)^2}{a+bx+cx^2} dx, x, \cos(x)\right) \\
&= -\text{Subst}\left(\int \left(\frac{b^2-c(a+2c)}{c^3} - \frac{bx}{c^2} + \frac{x^2}{c} - \frac{-a^2c-c^3+a(b^2-2c^2)+b(b^2-2c(a+c))x}{c^3(a+bx+cx^2)}\right) dx, x, \cos(x)\right) \\
&= -\frac{(b^2-c(a+2c))\cos(x)}{c^3} + \frac{b\cos^2(x)}{2c^2} - \frac{\cos^3(x)}{3c} \\
&\quad + \frac{\text{Subst}\left(\int \frac{-a^2c-c^3+a(b^2-2c^2)+b(b^2-2c(a+c))x}{a+bx+cx^2} dx, x, \cos(x)\right)}{c^3} \\
&= -\frac{(b^2-c(a+2c))\cos(x)}{c^3} + \frac{b\cos^2(x)}{2c^2} - \frac{\cos^3(x)}{3c} \\
&\quad + \frac{(b(b^2-2c(a+c)))\text{Subst}\left(\int \frac{b+2cx}{a+bx+cx^2} dx, x, \cos(x)\right)}{2c^4} \\
&\quad - \frac{(b^4+2c^2(a+c)^2-2b^2c(2a+c))\text{Subst}\left(\int \frac{1}{a+bx+cx^2} dx, x, \cos(x)\right)}{2c^4} \\
&= -\frac{(b^2-c(a+2c))\cos(x)}{c^3} + \frac{b\cos^2(x)}{2c^2} - \frac{\cos^3(x)}{3c} \\
&\quad + \frac{b(b^2-2c(a+c))\log(a+b\cos(x)+c\cos^2(x))}{2c^4} \\
&\quad + \frac{(b^4+2c^2(a+c)^2-2b^2c(2a+c))\text{Subst}\left(\int \frac{1}{b^2-4ac-x^2} dx, x, b+2c\cos(x)\right)}{c^4} \\
&= \frac{(b^4+2c^2(a+c)^2-2b^2c(2a+c))\text{arctanh}\left(\frac{b+2c\cos(x)}{\sqrt{b^2-4ac}}\right)}{c^4\sqrt{b^2-4ac}} - \frac{(b^2-c(a+2c))\cos(x)}{c^3} \\
&\quad + \frac{b\cos^2(x)}{2c^2} - \frac{\cos^3(x)}{3c} + \frac{b(b^2-2c(a+c))\log(a+b\cos(x)+c\cos^2(x))}{2c^4}
\end{aligned}$$

**Mathematica [A] (verified)**

Time = 0.47 (sec) , antiderivative size = 239, normalized size of antiderivative = 1.76

$$\begin{aligned}
&\int \frac{\sin^5(x)}{a+b\cos(x)+c\cos^2(x)} dx \\
&= \frac{3c(-4b^2+c(4a+7c))\cos(x)+3bc^2\cos(2x)-c^3\cos(3x)+\frac{6(-b^4-2c^2(a+c)^2+2b^2c(2a+c)+b^3\sqrt{b^2-4ac}-2bc(a+c)\sqrt{b^2-4ac})\sqrt{b^2-4ac}}{\sqrt{b^2-4ac}}}{12c^4}
\end{aligned}$$

[In] Integrate[Sin[x]^5/(a + b\*Cos[x] + c\*Cos[x]^2), x]

```
[Out] (3*c*(-4*b^2 + c*(4*a + 7*c))*Cos[x] + 3*b*c^2*Cos[2*x] - c^3*Cos[3*x] + (6
*(-b^4 - 2*c^2*(a + c)^2 + 2*b^2*c*(2*a + c) + b^3*Sqrt[b^2 - 4*a*c] - 2*b*
c*(a + c)*Sqrt[b^2 - 4*a*c])*Log[-b + Sqrt[b^2 - 4*a*c] - 2*c*Cos[x]])/Sqrt
[b^2 - 4*a*c] + (6*(b^4 + 2*c^2*(a + c)^2 - 2*b^2*c*(2*a + c) + b^3*Sqrt[b^
2 - 4*a*c] - 2*b*c*(a + c)*Sqrt[b^2 - 4*a*c])*Log[b + Sqrt[b^2 - 4*a*c] + 2
*c*Cos[x]])/Sqrt[b^2 - 4*a*c])/(12*c^4)
```

### Maple [A] (verified)

Time = 2.36 (sec) , antiderivative size = 160, normalized size of antiderivative = 1.18

method	result
derivativedivides	$\frac{-\frac{(\cos^3(x))c^2}{3} + \frac{(\cos^2(x))bc}{2} + \cos(x)ac - b^2 \cos(x) + 2c^2 \cos(x)}{c^3} + \frac{(-2cab + b^3 - 2bc^2) \ln(a + \cos(x)b + c(\cos^2(x)))}{2c} + \frac{2(-a^2c + \dots)}{c}$
default	$\frac{-\frac{(\cos^3(x))c^2}{3} + \frac{(\cos^2(x))bc}{2} + \cos(x)ac - b^2 \cos(x) + 2c^2 \cos(x)}{c^3} + \frac{(-2cab + b^3 - 2bc^2) \ln(a + \cos(x)b + c(\cos^2(x)))}{2c} + \frac{2(-a^2c + \dots)}{c}$
risch	Expression too large to display

```
[In] int(sin(x)^5/(a+cos(x)*b+c*cos(x)^2),x,method=_RETURNVERBOSE)
```

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

### Fricas [A] (verification not implemented)

none

Time = 0.36 (sec) , antiderivative size = 491, normalized size of antiderivative = 3.61

$$\int \frac{\sin^5(x)}{a + b \cos(x) + c \cos^2(x)} dx$$

$$= \left[ \frac{2(b^2c^3 - 4ac^4) \cos(x)^3 - 3(b^3c^2 - 4abc^3) \cos(x)^2 - 3(b^4 - 4ab^2c + 4ac^3 + 2c^4 + 2(a^2 - b^2)c^2) \sqrt{b^2 - 4ac}}{2(b^2c^3 - 4ac^4) \cos(x)^3 - 3(b^3c^2 - 4abc^3) \cos(x)^2 - 6(b^4 - 4ab^2c + 4ac^3 + 2c^4 + 2(a^2 - b^2)c^2) \sqrt{b^2 - 4ac}} \right]$$

```
[In] integrate(sin(x)^5/(a+b*cos(x)+c*cos(x)^2),x, algorithm="fricas")
```

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

```
*log(-(2*c^2*cos(x)^2 + 2*b*c*cos(x) + b^2 - 2*a*c + sqrt(b^2 - 4*a*c)*(2*c
*cos(x) + b))/(c*cos(x)^2 + b*cos(x) + a)) + 6*(b^4*c - 5*a*b^2*c^2 + 8*a*c
^4 + 2*(2*a^2 - b^2)*c^3)*cos(x) - 3*(b^5 - 6*a*b^3*c + 8*a*b*c^3 + 2*(4*a^
2*b - b^3)*c^2)*log(c*cos(x)^2 + b*cos(x) + a))/(b^2*c^4 - 4*a*c^5), -1/6*(
2*(b^2*c^3 - 4*a*c^4)*cos(x)^3 - 3*(b^3*c^2 - 4*a*b*c^3)*cos(x)^2 - 6*(b^4
- 4*a*b^2*c + 4*a*c^3 + 2*c^4 + 2*(a^2 - b^2)*c^2)*sqrt(-b^2 + 4*a*c)*arcta
n(-sqrt(-b^2 + 4*a*c)*(2*c*cos(x) + b)/(b^2 - 4*a*c)) + 6*(b^4*c - 5*a*b^2*
c^2 + 8*a*c^4 + 2*(2*a^2 - b^2)*c^3)*cos(x) - 3*(b^5 - 6*a*b^3*c + 8*a*b*c^
3 + 2*(4*a^2*b - b^3)*c^2)*log(c*cos(x)^2 + b*cos(x) + a))/(b^2*c^4 - 4*a*c
^5)]
```

### Sympy [F(-1)]

Timed out.

$$\int \frac{\sin^5(x)}{a + b \cos(x) + c \cos^2(x)} dx = \text{Timed out}$$

```
[In] integrate(sin(x)**5/(a+b*cos(x)+c*cos(x)**2),x)
```

```
[Out] Timed out
```

### Maxima [F(-2)]

Exception generated.

$$\int \frac{\sin^5(x)}{a + b \cos(x) + c \cos^2(x)} dx = \text{Exception raised: ValueError}$$

```
[In] integrate(sin(x)^5/(a+b*cos(x)+c*cos(x)^2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see 'assume?' for mo
re deta
```

### Giac [A] (verification not implemented)

none

Time = 0.30 (sec) , antiderivative size = 153, normalized size of antiderivative = 1.12

$$\int \frac{\sin^5(x)}{a + b \cos(x) + c \cos^2(x)} dx$$

$$= -\frac{2c^2 \cos(x)^3 - 3bc \cos(x)^2 + 6b^2 \cos(x) - 6ac \cos(x) - 12c^2 \cos(x)}{6c^3}$$

$$+ \frac{(b^3 - 2abc - 2bc^2) \log(c \cos(x)^2 + b \cos(x) + a)}{2c^4}$$

$$- \frac{(b^4 - 4ab^2c + 2a^2c^2 - 2b^2c^2 + 4ac^3 + 2c^4) \arctan\left(\frac{2c \cos(x) + b}{\sqrt{-b^2 + 4ac}}\right)}{\sqrt{-b^2 + 4ac}c^4}$$

[In] integrate(sin(x)^5/(a+b\*cos(x)+c\*cos(x)^2),x, algorithm="giac")

[Out] -1/6\*(2\*c^2\*cos(x)^3 - 3\*b\*c\*cos(x)^2 + 6\*b^2\*cos(x) - 6\*a\*c\*cos(x) - 12\*c^2\*cos(x))/c^3 + 1/2\*(b^3 - 2\*a\*b\*c - 2\*b\*c^2)\*log(c\*cos(x)^2 + b\*cos(x) + a)/c^4 - (b^4 - 4\*a\*b^2\*c + 2\*a^2\*c^2 - 2\*b^2\*c^2 + 4\*a\*c^3 + 2\*c^4)\*arctan((2\*c\*cos(x) + b)/sqrt(-b^2 + 4\*a\*c))/(sqrt(-b^2 + 4\*a\*c)\*c^4)

### Mupad [B] (verification not implemented)

Time = 2.74 (sec) , antiderivative size = 197, normalized size of antiderivative = 1.45

$$\int \frac{\sin^5(x)}{a + b \cos(x) + c \cos^2(x)} dx$$

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

$$- \frac{\ln(c \cos(x)^2 + b \cos(x) + a) (8a^2 b c^2 - 6a b^3 c + 8a b c^3 + b^5 - 2b^3 c^2)}{2(4a c^5 - b^2 c^4)} + \frac{b \cos(x)^2}{2c^2}$$

$$- \frac{\operatorname{atan}\left(\frac{b}{\sqrt{4ac-b^2}} + \frac{2c \cos(x)}{\sqrt{4ac-b^2}}\right) (2a^2 c^2 - 4a b^2 c + 4a c^3 + b^4 - 2b^2 c^2 + 2c^4)}{c^4 \sqrt{4ac-b^2}}$$

[In] int(sin(x)^5/(a + b\*cos(x) + c\*cos(x)^2),x)

[Out] cos(x)\*(a/c^2 + 2/c - b^2/c^3) - cos(x)^3/(3\*c) - (log(a + b\*cos(x) + c\*cos(x)^2)\*(b^5 - 2\*b^3\*c^2 + 8\*a^2\*b\*c^2 + 8\*a\*b\*c^3 - 6\*a\*b^3\*c))/(2\*(4\*a\*c^5 - b^2\*c^4)) + (b\*cos(x)^2)/(2\*c^2) - (atan(b/(4\*a\*c - b^2)^(1/2) + (2\*c\*cos(x))/(4\*a\*c - b^2)^(1/2))\*(4\*a\*c^3 + b^4 + 2\*c^4 + 2\*a^2\*c^2 - 2\*b^2\*c^2 - 4\*a\*b^2\*c))/(c^4\*(4\*a\*c - b^2)^(1/2))

## 3.2 $\int \frac{\sin^3(x)}{a+b \cos(x)+c \cos^2(x)} dx$

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### Optimal result

Integrand size = 19, antiderivative size = 76

$$\int \frac{\sin^3(x)}{a+b \cos(x)+c \cos^2(x)} dx = -\frac{(b^2-2c(a+c)) \operatorname{arctanh}\left(\frac{b+2c \cos(x)}{\sqrt{b^2-4ac}}\right)}{c^2 \sqrt{b^2-4ac}} + \frac{\cos(x)}{c} - \frac{b \log(a+b \cos(x)+c \cos^2(x))}{2c^2}$$

[Out]  $\cos(x)/c-1/2*b*\ln(a+b*\cos(x)+c*\cos(x)^2)/c^2-(b^2-2*c*(a+c))*\operatorname{arctanh}((b+2*c*\cos(x))/(-4*a*c+b^2)^{(1/2)})/c^2/(-4*a*c+b^2)^{(1/2)}$

### Rubi [A] (verified)

Time = 0.15 (sec) , antiderivative size = 76, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6,  $\frac{\text{number of rules}}{\text{integrand size}} = 0.316$ , Rules used = {3340, 1671, 648, 632, 212, 642}

$$\int \frac{\sin^3(x)}{a+b \cos(x)+c \cos^2(x)} dx = -\frac{(b^2-2c(a+c)) \operatorname{arctanh}\left(\frac{b+2c \cos(x)}{\sqrt{b^2-4ac}}\right)}{c^2 \sqrt{b^2-4ac}} - \frac{b \log(a+b \cos(x)+c \cos^2(x))}{2c^2} + \frac{\cos(x)}{c}$$

[In]  $\text{Int}[\text{Sin}[x]^3/(a+b*\text{Cos}[x]+c*\text{Cos}[x]^2),x]$

[Out]  $-(((b^2-2*c*(a+c))*\text{ArcTanh}[(b+2*c*\text{Cos}[x])/ \text{Sqrt}[b^2-4*a*c]])/(c^2*\text{Sqrt}[b^2-4*a*c])) + \text{Cos}[x]/c - (b*\text{Log}[a+b*\text{Cos}[x]+c*\text{Cos}[x]^2])/(2*c^2)$

Rule 212

```
Int[((a_) + (b_)*(x_)^2)^(-1), x_Symbol] := Simp[(1/(Rt[a, 2]*Rt[-b, 2]))*
ArcTanh[Rt[-b, 2]*(x/Rt[a, 2])], x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

### Rule 632

```
Int[((a_) + (b_)*(x_) + (c_)*(x_)^2)^(-1), x_Symbol] := Dist[-2, Subst[Int[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

### Rule 642

```
Int[((d_) + (e_)*(x_))/((a_) + (b_)*(x_) + (c_)*(x_)^2), x_Symbol] := Simp[d*(Log[RemoveContent[a + b*x + c*x^2, x]]/b), x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[2*c*d - b*e, 0]
```

### Rule 648

```
Int[((d_) + (e_)*(x_))/((a_) + (b_)*(x_) + (c_)*(x_)^2), x_Symbol] := Dist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), Int[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] && !NiceSqrtQ[b^2 - 4*a*c]
```

### Rule 1671

```
Int[(Pq_)*((a_) + (b_)*(x_) + (c_)*(x_)^2)^(p_), x_Symbol] := Int[ExpandIntegrand[Pq*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c}, x] && PolyQ[Pq, x] && IGtQ[p, -2]
```

### Rule 3340

```
Int[((a_) + (b_)*(cos[(d_) + (e_)*(x_)])*(f_))^(n_) + (c_)*(cos[(d_) + (e_)*(x_)])*(f_))^(n2_))^(p_)*sin[(d_) + (e_)*(x_)]^(m_), x_Symbol] := Module[{g = FreeFactors[Cos[d + e*x], x]}, Dist[-g/e, Subst[Int[(1 - g^2*x^2)^((m - 1)/2)*(a + b*(f*g*x)^n + c*(f*g*x)^(2*n))^p, x], x, Cos[d + e*x]/g], x] /; FreeQ[{a, b, c, d, e, f, n, p}, x] && EqQ[n2, 2*n] && IntegerQ[(m - 1)/2]
```

### Rubi steps

$$\begin{aligned} \text{integral} &= -\text{Subst}\left(\int \frac{1-x^2}{a+bx+cx^2} dx, x, \cos(x)\right) \\ &= -\text{Subst}\left(\int \left(-\frac{1}{c} + \frac{a+c+bx}{c(a+bx+cx^2)}\right) dx, x, \cos(x)\right) \end{aligned}$$

$$\begin{aligned}
&= \frac{\cos(x)}{c} - \frac{\text{Subst}\left(\int \frac{a+c+bx}{a+bx+cx^2} dx, x, \cos(x)\right)}{c} \\
&= \frac{\cos(x)}{c} - \frac{b \text{Subst}\left(\int \frac{b+2cx}{a+bx+cx^2} dx, x, \cos(x)\right)}{2c^2} + \frac{(b^2 - 2c(a+c)) \text{Subst}\left(\int \frac{1}{a+bx+cx^2} dx, x, \cos(x)\right)}{2c^2} \\
&= \frac{\cos(x)}{c} - \frac{b \log(a + b \cos(x) + c \cos^2(x))}{2c^2} \\
&\quad - \frac{(b^2 - 2c(a+c)) \text{Subst}\left(\int \frac{1}{b^2-4ac-x^2} dx, x, b + 2c \cos(x)\right)}{c^2} \\
&= -\frac{(b^2 - 2c(a+c)) \operatorname{arctanh}\left(\frac{b+2c \cos(x)}{\sqrt{b^2-4ac}}\right)}{c^2 \sqrt{b^2 - 4ac}} + \frac{\cos(x)}{c} - \frac{b \log(a + b \cos(x) + c \cos^2(x))}{2c^2}
\end{aligned}$$

### Mathematica [A] (verified)

Time = 0.23 (sec) , antiderivative size = 131, normalized size of antiderivative = 1.72

$$\begin{aligned}
&\int \frac{\sin^3(x)}{a + b \cos(x) + c \cos^2(x)} dx \\
&= \frac{2c\sqrt{b^2 - 4ac} \cos(x) + (b^2 - 2c(a+c) - b\sqrt{b^2 - 4ac}) \log(-b + \sqrt{b^2 - 4ac} - 2c \cos(x)) - (b^2 - 2c(a+c))}{2c^2 \sqrt{b^2 - 4ac}}
\end{aligned}$$

[In] Integrate[Sin[x]^3/(a + b\*Cos[x] + c\*Cos[x]^2),x]

[Out] (2\*c\*Sqrt[b^2 - 4\*a\*c]\*Cos[x] + (b^2 - 2\*c\*(a + c) - b\*Sqrt[b^2 - 4\*a\*c])\*Log[-b + Sqrt[b^2 - 4\*a\*c] - 2\*c\*Cos[x]] - (b^2 - 2\*c\*(a + c) + b\*Sqrt[b^2 - 4\*a\*c])\*Log[b + Sqrt[b^2 - 4\*a\*c] + 2\*c\*Cos[x]])/(2\*c^2\*Sqrt[b^2 - 4\*a\*c])

### Maple [A] (verified)

Time = 0.98 (sec) , antiderivative size = 82, normalized size of antiderivative = 1.08

method	result	size
derivativdivides	$\frac{\cos(x)}{c} + \frac{-\frac{b \ln(a+\cos(x)b+c(\cos^2(x)))}{2c} + \frac{2(-a-c+\frac{b^2}{2c}) \operatorname{arctan}\left(\frac{b+2c \cos(x)}{\sqrt{4ac-b^2}}\right)}{c}}{c}$	82
default	$\frac{\cos(x)}{c} + \frac{-\frac{b \ln(a+\cos(x)b+c(\cos^2(x)))}{2c} + \frac{2(-a-c+\frac{b^2}{2c}) \operatorname{arctan}\left(\frac{b+2c \cos(x)}{\sqrt{4ac-b^2}}\right)}{c}}{c}$	82
risch	Expression too large to display	1094

[In] int(sin(x)^3/(a+cos(x)\*b+c\*cos(x)^2),x,method=\_RETURNVERBOSE)

[Out] cos(x)/c+1/c\*(-1/2\*b/c\*ln(a+cos(x)\*b+c\*cos(x)^2)+2\*(-a-c+1/2\*b^2/c)/(4\*a\*c-b^2)^(1/2)\*arctan((b+2\*c\*cos(x))/(4\*a\*c-b^2)^(1/2)))



**Fricas [A] (verification not implemented)**

none

Time = 0.31 (sec) , antiderivative size = 258, normalized size of antiderivative = 3.39

$$\int \frac{\sin^3(x)}{a + b \cos(x) + c \cos^2(x)} dx$$

$$= \frac{\left[ \frac{(b^2 - 2ac - 2c^2)\sqrt{b^2 - 4ac} \log\left(-\frac{2c^2 \cos(x)^2 + 2bc \cos(x) + b^2 - 2ac + \sqrt{b^2 - 4ac}(2c \cos(x) + b)}{c \cos(x)^2 + b \cos(x) + a}\right) - 2(b^2c - 4ac^2) \cos(x)}{2(b^2c^2 - 4ac^3)} \right.}{\left. - \frac{2(b^2 - 2ac - 2c^2)\sqrt{-b^2 + 4ac} \arctan\left(-\frac{\sqrt{-b^2 + 4ac}(2c \cos(x) + b)}{b^2 - 4ac}\right) - 2(b^2c - 4ac^2) \cos(x) + (b^3 - 4abc)}{2(b^2c^2 - 4ac^3)} \right]}$$

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

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

**Sympy [F(-1)]**

Timed out.

$$\int \frac{\sin^3(x)}{a + b \cos(x) + c \cos^2(x)} dx = \text{Timed out}$$

```
[In] integrate(sin(x)**3/(a+b*cos(x)+c*cos(x)**2),x)
```

```
[Out] Timed out
```

**Maxima [F(-2)]**

Exception generated.

$$\int \frac{\sin^3(x)}{a + b \cos(x) + c \cos^2(x)} dx = \text{Exception raised: ValueError}$$

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

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested additional constraints; using the 'assume' command before evaluation *may* help (example of legal syntax is 'assume(4*a*c-b^2>0)', see 'assume?' for more details)
```

**Giac [A] (verification not implemented)**

none

Time = 0.30 (sec) , antiderivative size = 76, normalized size of antiderivative = 1.00

$$\int \frac{\sin^3(x)}{a + b \cos(x) + c \cos^2(x)} dx = \frac{\cos(x)}{c} - \frac{b \log(c \cos(x)^2 + b \cos(x) + a)}{2c^2} + \frac{(b^2 - 2ac - 2c^2) \arctan\left(\frac{2c \cos(x) + b}{\sqrt{-b^2 + 4ac}}\right)}{\sqrt{-b^2 + 4ac}c^2}$$

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

[Out] cos(x)/c - 1/2\*b\*log(c\*cos(x)^2 + b\*cos(x) + a)/c^2 + (b^2 - 2\*a\*c - 2\*c^2)\*arctan((2\*c\*cos(x) + b)/sqrt(-b^2 + 4\*a\*c))/(sqrt(-b^2 + 4\*a\*c)\*c^2)

**Mupad [B] (verification not implemented)**

Time = 0.22 (sec) , antiderivative size = 226, normalized size of antiderivative = 2.97

$$\int \frac{\sin^3(x)}{a + b \cos(x) + c \cos^2(x)} dx = \frac{\cos(x)}{c} - \frac{2 \operatorname{atan}\left(\frac{b}{\sqrt{4ac - b^2}} + \frac{2c \cos(x)}{\sqrt{4ac - b^2}}\right)}{\sqrt{4ac - b^2}} + \frac{b^3 \ln(c \cos(x)^2 + b \cos(x) + a)}{2(4ac^3 - b^2c^2)} + \frac{b^2 \operatorname{atan}\left(\frac{b}{\sqrt{4ac - b^2}} + \frac{2c \cos(x)}{\sqrt{4ac - b^2}}\right)}{c^2 \sqrt{4ac - b^2}} - \frac{2a \operatorname{atan}\left(\frac{b}{\sqrt{4ac - b^2}} + \frac{2c \cos(x)}{\sqrt{4ac - b^2}}\right)}{c \sqrt{4ac - b^2}} - \frac{2abc \ln(c \cos(x)^2 + b \cos(x) + a)}{4ac^3 - b^2c^2}$$

[In] int(sin(x)^3/(a + b\*cos(x) + c\*cos(x)^2),x)

[Out] cos(x)/c - (2\*atan(b/(4\*a\*c - b^2)^(1/2) + (2\*c\*cos(x))/(4\*a\*c - b^2)^(1/2)))/(4\*a\*c - b^2)^(1/2) + (b^3\*log(a + b\*cos(x) + c\*cos(x)^2))/(2\*(4\*a\*c^3 - b^2\*c^2)) + (b^2\*atan(b/(4\*a\*c - b^2)^(1/2) + (2\*c\*cos(x))/(4\*a\*c - b^2)^(1/2)))/(c^2\*(4\*a\*c - b^2)^(1/2)) - (2\*a\*atan(b/(4\*a\*c - b^2)^(1/2) + (2\*c\*cos(x))/(4\*a\*c - b^2)^(1/2)))/(c\*(4\*a\*c - b^2)^(1/2)) - (2\*a\*b\*c\*log(a + b\*cos(x) + c\*cos(x)^2))/(4\*a\*c^3 - b^2\*c^2)

### 3.3 $\int \frac{\sin(x)}{a+b \cos(x)+c \cos^2(x)} dx$

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Giac [A] (verification not implemented)	46
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#### Optimal result

Integrand size = 17, antiderivative size = 35

$$\int \frac{\sin(x)}{a+b \cos(x)+c \cos^2(x)} dx = \frac{2 \operatorname{arctanh}\left(\frac{b+2c \cos(x)}{\sqrt{b^2-4ac}}\right)}{\sqrt{b^2-4ac}}$$

[Out]  $2 \operatorname{arctanh}\left(\frac{b+2c \cos(x)}{\sqrt{b^2-4ac}}\right) / \sqrt{b^2-4ac}$

#### Rubi [A] (verified)

Time = 0.05 (sec), antiderivative size = 35, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3,  $\frac{\text{number of rules}}{\text{integrand size}} = 0.176$ , Rules used = {3340, 632, 212}

$$\int \frac{\sin(x)}{a+b \cos(x)+c \cos^2(x)} dx = \frac{2 \operatorname{arctanh}\left(\frac{b+2c \cos(x)}{\sqrt{b^2-4ac}}\right)}{\sqrt{b^2-4ac}}$$

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

[Out] `(2*ArcTanh[(b + 2*c*Cos[x])/Sqrt[b^2 - 4*a*c]])/Sqrt[b^2 - 4*a*c]`

#### Rule 212

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

#### Rule 632

`Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] := Dist[-2, Subst[Int[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},`

$x] \&\& \text{NeQ}[b^2 - 4*a*c, 0]$

### Rule 3340

```
Int[((a_.) + (b_.)*(cos[(d_.) + (e_.)*(x_)]*(f_.))^(n_.) + (c_.)*(cos[(d_.)
+ (e_.)*(x_)]*(f_.))^(n2_.))^(p_.)*sin[(d_.) + (e_.)*(x_)]^(m_.), x_Symbol
] :> Module[{g = FreeFactors[Cos[d + e*x], x]}, Dist[-g/e, Subst[Int[(1 - g
^2*x^2)^((m - 1)/2)*(a + b*(f*g*x)^n + c*(f*g*x)^(2*n))^p, x], x, Cos[d + e
*x]/g], x]] /; FreeQ[{a, b, c, d, e, f, n, p}, x] && EqQ[n2, 2*n] && Intege
rQ[(m - 1)/2]
```

### Rubi steps

$$\begin{aligned} \text{integral} &= -\text{Subst}\left(\int \frac{1}{a + bx + cx^2} dx, x, \cos(x)\right) \\ &= 2\text{Subst}\left(\int \frac{1}{b^2 - 4ac - x^2} dx, x, b + 2c \cos(x)\right) \\ &= \frac{2\text{arctanh}\left(\frac{b+2c \cos(x)}{\sqrt{b^2-4ac}}\right)}{\sqrt{b^2-4ac}} \end{aligned}$$

### Mathematica [A] (verified)

Time = 0.05 (sec) , antiderivative size = 39, normalized size of antiderivative = 1.11

$$\int \frac{\sin(x)}{a + b \cos(x) + c \cos^2(x)} dx = -\frac{2 \arctan\left(\frac{b+2c \cos(x)}{\sqrt{-b^2+4ac}}\right)}{\sqrt{-b^2+4ac}}$$

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

[Out] (-2\*ArcTan[(b + 2\*c\*Cos[x])/Sqrt[-b^2 + 4\*a\*c]])/Sqrt[-b^2 + 4\*a\*c]

### Maple [A] (verified)

Time = 0.28 (sec) , antiderivative size = 36, normalized size of antiderivative = 1.03

method	result	size
derivativedivides	$-\frac{2 \arctan\left(\frac{b+2c \cos(x)}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}}$	36
default	$-\frac{2 \arctan\left(\frac{b+2c \cos(x)}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}}$	36
risch	$-\frac{i \ln\left(e^{2ix} + \frac{(4iac-ib^2+b\sqrt{4ac-b^2})e^{ix}}{c\sqrt{4ac-b^2}} + 1\right)}{\sqrt{4ac-b^2}} + \frac{i \ln\left(e^{2ix} + \frac{(-4iac+ib^2+b\sqrt{4ac-b^2})e^{ix}}{c\sqrt{4ac-b^2}} + 1\right)}{\sqrt{4ac-b^2}}$	142

[In] `int(sin(x)/(a+cos(x)*b+c*cos(x)^2),x,method=_RETURNVERBOSE)`

[Out]  $-2/(4*a*c-b^2)^{(1/2)}*\arctan((b+2*c*\cos(x))/(4*a*c-b^2)^{(1/2)})$

### Fricas [A] (verification not implemented)

none

Time = 0.27 (sec) , antiderivative size = 126, normalized size of antiderivative = 3.60

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

$$= \left[ \frac{\log\left(-\frac{2c^2 \cos(x)^2 + 2bc \cos(x) + b^2 - 2ac + \sqrt{b^2 - 4ac}(2c \cos(x) + b)}{c \cos(x)^2 + b \cos(x) + a}\right)}{\sqrt{b^2 - 4ac}}, \frac{2\sqrt{-b^2 + 4ac} \arctan\left(-\frac{\sqrt{-b^2 + 4ac}(2c \cos(x) + b)}{b^2 - 4ac}\right)}{b^2 - 4ac} \right]$$

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

[Out] `[log(-(2*c^2*cos(x)^2 + 2*b*c*cos(x) + b^2 - 2*a*c + sqrt(b^2 - 4*a*c))*(2*c*cos(x) + b))/(c*cos(x)^2 + b*cos(x) + a))/sqrt(b^2 - 4*a*c), 2*sqrt(-b^2 + 4*a*c)*arctan(-sqrt(-b^2 + 4*a*c)*(2*c*cos(x) + b)/(b^2 - 4*a*c))/(b^2 - 4*a*c)]`

### Sympy [B] (verification not implemented)

Leaf count of result is larger than twice the leaf count of optimal. 99 vs. 2(34) = 68.

Time = 1.28 (sec) , antiderivative size = 99, normalized size of antiderivative = 2.83

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

$$= \begin{cases} -\frac{\log\left(\frac{a}{b} + \cos(x)\right)}{b} & \text{for } c = 0 \\ \frac{2}{b+2c \cos(x)} & \text{for } a = \frac{b^2}{4c} \\ -\frac{\log\left(\frac{b}{2c} + \cos(x) - \frac{\sqrt{-4ac+b^2}}{2c}\right)}{\sqrt{-4ac+b^2}} + \frac{\log\left(\frac{b}{2c} + \cos(x) + \frac{\sqrt{-4ac+b^2}}{2c}\right)}{\sqrt{-4ac+b^2}} & \text{otherwise} \end{cases}$$

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

[Out] Piecewise((-log(a/b + cos(x))/b, Eq(c, 0)), (2/(b + 2\*c\*cos(x)), Eq(a, b\*\*2/(4\*c))), (-log(b/(2\*c) + cos(x) - sqrt(-4\*a\*c + b\*\*2)/(2\*c))/sqrt(-4\*a\*c + b\*\*2) + log(b/(2\*c) + cos(x) + sqrt(-4\*a\*c + b\*\*2)/(2\*c))/sqrt(-4\*a\*c + b\*\*2), True))

## Maxima [F(-2)]

Exception generated.

$$\int \frac{\sin(x)}{a + b \cos(x) + c \cos^2(x)} dx = \text{Exception raised: ValueError}$$

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

[Out] Exception raised: ValueError >> Computation failed since Maxima requested additional constraints; using the 'assume' command before evaluation \*may\* help (example of legal syntax is 'assume(4\*a\*c-b^2>0)', see 'assume?' for more details)

## Giac [A] (verification not implemented)

none

Time = 0.30 (sec) , antiderivative size = 35, normalized size of antiderivative = 1.00

$$\int \frac{\sin(x)}{a + b \cos(x) + c \cos^2(x)} dx = -\frac{2 \arctan\left(\frac{2c \cos(x) + b}{\sqrt{-b^2 + 4ac}}\right)}{\sqrt{-b^2 + 4ac}}$$

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

[Out] -2\*arctan((2\*c\*cos(x) + b)/sqrt(-b^2 + 4\*a\*c))/sqrt(-b^2 + 4\*a\*c)

## Mupad [B] (verification not implemented)

Time = 3.18 (sec) , antiderivative size = 47, normalized size of antiderivative = 1.34

$$\int \frac{\sin(x)}{a + b \cos(x) + c \cos^2(x)} dx = -\frac{2 \operatorname{atan}\left(\frac{b}{\sqrt{4ac - b^2}} + \frac{2c \cos(x)}{\sqrt{4ac - b^2}}\right)}{\sqrt{4ac - b^2}}$$

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

[Out] -(2\*atan(b/(4\*a\*c - b^2)^(1/2) + (2\*c\*cos(x))/(4\*a\*c - b^2)^(1/2)))/(4\*a\*c - b^2)^(1/2)

### 3.4 $\int \frac{\csc(x)}{a+b \cos(x)+c \cos^2(x)} dx$

Optimal result	47
Rubi [A] (verified)	47
Mathematica [A] (verified)	49
Maple [A] (verified)	50
Fricas [A] (verification not implemented)	50
Sympy [F]	51
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Giac [A] (verification not implemented)	51
Mupad [B] (verification not implemented)	52

#### Optimal result

Integrand size = 17, antiderivative size = 129

$$\int \frac{\csc(x)}{a+b \cos(x)+c \cos^2(x)} dx = -\frac{(b^2-2ac-2c^2) \operatorname{arctanh}\left(\frac{b+2c \cos(x)}{\sqrt{b^2-4ac}}\right)}{(a-b+c)(a+b+c)\sqrt{b^2-4ac}} + \frac{\log(1-\cos(x))}{2(a+b+c)} - \frac{\log(1+\cos(x))}{2(a-b+c)} + \frac{b \log(a+b \cos(x)+c \cos^2(x))}{2(a-b+c)(a+b+c)}$$

[Out] 1/2\*ln(1-cos(x))/(a+b+c)-1/2\*ln(1+cos(x))/(a-b+c)+1/2\*b\*ln(a+b\*cos(x)+c\*cos(x)^2)/(a-b+c)/(a+b+c)-(-2\*a\*c+b^2-2\*c^2)\*arctanh((b+2\*c\*cos(x))/(-4\*a\*c+b^2)^(1/2))/(a-b+c)/(a+b+c)/(-4\*a\*c+b^2)^(1/2)

#### Rubi [A] (verified)

Time = 0.20 (sec) , antiderivative size = 129, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 8,  $\frac{\text{number of rules}}{\text{integrand size}} = 0.471$ , Rules used = {3340, 995, 648, 632, 212, 642, 647, 31}

$$\int \frac{\csc(x)}{a+b \cos(x)+c \cos^2(x)} dx = -\frac{(-2ac+b^2-2c^2) \operatorname{arctanh}\left(\frac{b+2c \cos(x)}{\sqrt{b^2-4ac}}\right)}{(a-b+c)(a+b+c)\sqrt{b^2-4ac}} + \frac{b \log(a+b \cos(x)+c \cos^2(x))}{2(a-b+c)(a+b+c)} + \frac{\log(1-\cos(x))}{2(a+b+c)} - \frac{\log(\cos(x)+1)}{2(a-b+c)}$$

[In] Int[Csc[x]/(a+b\*Cos[x]+c\*Cos[x]^2),x]

[Out] -(((b^2-2\*a\*c-2\*c^2)\*ArcTanh[(b+2\*c\*Cos[x])/Sqrt[b^2-4\*a\*c]])/((a-b+c)\*(a+b+c)\*Sqrt[b^2-4\*a\*c]))+Log[1-Cos[x]]/(2\*(a+b+c))-

$\text{Log}[1 + \text{Cos}[x]]/(2*(a - b + c)) + (b*\text{Log}[a + b*\text{Cos}[x] + c*\text{Cos}[x]^2]/(2*(a - b + c)*(a + b + c))$

### Rule 31

$\text{Int}[(a + (b \cdot x)^{-1}), x\_Symbol] \rightarrow \text{Simp}[\text{Log}[\text{RemoveContent}[a + b \cdot x, x]]/b, x] /; \text{FreeQ}[\{a, b\}, x]$

### Rule 212

$\text{Int}[(a + (b \cdot x)^2)^{-1}, x\_Symbol] \rightarrow \text{Simp}[(1/(\text{Rt}[a, 2] * \text{Rt}[-b, 2])) * \text{ArcTanh}[\text{Rt}[-b, 2] * (x/\text{Rt}[a, 2])], x] /; \text{FreeQ}[\{a, b\}, x] \&\& \text{NegQ}[a/b] \&\& (\text{GtQ}[a, 0] \parallel \text{LtQ}[b, 0])$

### Rule 632

$\text{Int}[(a + (b \cdot x) + (c \cdot x)^2)^{-1}, x\_Symbol] \rightarrow \text{Dist}[-2, \text{Subst}[\text{Int}[1/\text{Simp}[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; \text{FreeQ}[\{a, b, c\}, x] \&\& \text{NeQ}[b^2 - 4*a*c, 0]$

### Rule 642

$\text{Int}[(d + (e \cdot x))/(a + (b \cdot x) + (c \cdot x)^2), x\_Symbol] \rightarrow \text{Simp}[d * (\text{Log}[\text{RemoveContent}[a + b \cdot x + c \cdot x^2, x]]/b), x] /; \text{FreeQ}[\{a, b, c, d, e\}, x] \&\& \text{EqQ}[2*c*d - b*e, 0]$

### Rule 647

$\text{Int}[(d + (e \cdot x))/(a + (c \cdot x)^2), x\_Symbol] \rightarrow \text{With}[\{q = \text{Rt}[-a]*c, 2\}, \text{Dist}[e/2 + c*(d/(2*q)), \text{Int}[1/(-q + c*x), x], x] + \text{Dist}[e/2 - c*(d/(2*q)), \text{Int}[1/(q + c*x), x], x]] /; \text{FreeQ}[\{a, c, d, e\}, x] \&\& \text{NiceSqrtQ}[-a]*c]$

### Rule 648

$\text{Int}[(d + (e \cdot x))/(a + (b \cdot x) + (c \cdot x)^2), x\_Symbol] \rightarrow \text{Dist}[(2*c*d - b*e)/(2*c), \text{Int}[1/(a + b*x + c*x^2), x], x] + \text{Dist}[e/(2*c), \text{Int}[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; \text{FreeQ}[\{a, b, c, d, e\}, x] \&\& \text{NeQ}[2*c*d - b*e, 0] \&\& \text{NeQ}[b^2 - 4*a*c, 0] \&\& \text{!NiceSqrtQ}[b^2 - 4*a*c]$

### Rule 995

$\text{Int}[1/((a + (b \cdot x) + (c \cdot x)^2)*((d + (f \cdot x)^2))), x\_Symbol] \rightarrow \text{With}[\{q = c^2*d^2 + b^2*d*f - 2*a*c*d*f + a^2*f^2\}, \text{Dist}[1/q, \text{Int}[(c^2*d + b^2*f - a*c*f + b*c*f*x)/(a + b*x + c*x^2), x], x] - \text{Dist}[1/q, \text{Int}[(c*d*f - a*f^2 + b*f^2*x)/(d + f*x^2), x], x] /; \text{NeQ}[q, 0] /; \text{FreeQ}[\{a, b, c, d, f\}, x] \&\& \text{NeQ}[b^2 - 4*a*c, 0]$



## Rule 3340

```
Int[((a_.) + (b_.)*(cos[(d_.) + (e_.)*(x_)])*(f_.))^(n_.) + (c_.)*(cos[(d_.)
+ (e_.)*(x_)])*(f_.))^(n2_.))^(p_.)*sin[(d_.) + (e_.)*(x_)]^(m_.), x_Symbol
] :> Module[{g = FreeFactors[Cos[d + e*x], x]}, Dist[-g/e, Subst[Int[(1 - g
^2*x^2)^(m - 1)/2*(a + b*(f*g*x)^n + c*(f*g*x)^(2*n))^p, x], x, Cos[d + e
*x]/g], x]] /; FreeQ[{a, b, c, d, e, f, n, p}, x] && EqQ[n2, 2*n] && Intege
rQ[(m - 1)/2]
```

## Rubi steps

$$\begin{aligned}
\text{integral} &= -\text{Subst}\left(\int \frac{1}{(1-x^2)(a+bx+cx^2)} dx, x, \cos(x)\right) \\
&= \frac{\text{Subst}\left(\int \frac{-a-c+bx}{1-x^2} dx, x, \cos(x)\right)}{(a-b+c)(a+b+c)} - \frac{\text{Subst}\left(\int \frac{-b^2+ac+c^2-bcx}{a+bx+cx^2} dx, x, \cos(x)\right)}{(a-b+c)(a+b+c)} \\
&= \frac{\text{Subst}\left(\int \frac{1}{-1-x} dx, x, \cos(x)\right)}{2(a-b+c)} - \frac{\text{Subst}\left(\int \frac{1}{1-x} dx, x, \cos(x)\right)}{2(a+b+c)} \\
&\quad + \frac{b\text{Subst}\left(\int \frac{b+2cx}{a+bx+cx^2} dx, x, \cos(x)\right)}{2(a-b+c)(a+b+c)} \\
&\quad + \frac{(b^2-2c(a+c))\text{Subst}\left(\int \frac{1}{a+bx+cx^2} dx, x, \cos(x)\right)}{2(a-b+c)(a+b+c)} \\
&= \frac{\log(1-\cos(x))}{2(a+b+c)} - \frac{\log(1+\cos(x))}{2(a-b+c)} + \frac{b\log(a+b\cos(x)+c\cos^2(x))}{2(a-b+c)(a+b+c)} \\
&\quad - \frac{(b^2-2c(a+c))\text{Subst}\left(\int \frac{1}{b^2-4ac-x^2} dx, x, b+2c\cos(x)\right)}{(a-b+c)(a+b+c)} \\
&= -\frac{(b^2-2c(a+c))\text{arctanh}\left(\frac{b+2c\cos(x)}{\sqrt{b^2-4ac}}\right)}{(a-b+c)(a+b+c)\sqrt{b^2-4ac}} + \frac{\log(1-\cos(x))}{2(a+b+c)} \\
&\quad - \frac{\log(1+\cos(x))}{2(a-b+c)} + \frac{b\log(a+b\cos(x)+c\cos^2(x))}{2(a-b+c)(a+b+c)}
\end{aligned}$$

## Mathematica [A] (verified)

Time = 0.15 (sec) , antiderivative size = 126, normalized size of antiderivative = 0.98

$$\int \frac{\csc(x)}{a+b\cos(x)+c\cos^2(x)} dx = \frac{(-2b^2+4c(a+c))\arctan\left(\frac{b+2c\cos(x)}{\sqrt{-b^2+4ac}}\right) + \sqrt{-b^2+4ac}(-((a-b+c)\log(1-\cos(x)))) + (a+b+c)\log(1-\cos(x))}{2(a-b+c)(a+b+c)\sqrt{-b^2+4ac}}$$

[In] Integrate[Csc[x]/(a + b\*Cos[x] + c\*Cos[x]^2),x]

[Out]  $-\frac{1}{2} * ((-2 * b^2 + 4 * c * (a + c)) * \text{ArcTan}[(b + 2 * c * \text{Cos}[x]) / \text{Sqrt}[-b^2 + 4 * a * c]] + \text{Sqrt}[-b^2 + 4 * a * c] * (-((a - b + c) * \text{Log}[1 - \text{Cos}[x]]) + (a + b + c) * \text{Log}[1 + \text{Cos}[x]] - b * \text{Log}[a + b * \text{Cos}[x] + c * \text{Cos}[x]^2])) / ((a - b + c) * (a + b + c) * \text{Sqrt}[-b^2 + 4 * a * c])$

## Maple [A] (verified)

Time = 0.87 (sec) , antiderivative size = 121, normalized size of antiderivative = 0.94

method	result	size
default	$\frac{\frac{b \ln(a + \cos(x)b + c(\cos^2(x)))}{2} + \frac{2(-ac + \frac{1}{2}b^2 - c^2) \arctan\left(\frac{b + 2c \cos(x)}{\sqrt{4ac - b^2}}\right)}{\sqrt{4ac - b^2}}}{(a - b + c)(a + b + c)} - \frac{\ln(1 + \cos(x))}{2a - 2b + 2c} + \frac{\ln(\cos(x) - 1)}{2a + 2b + 2c}$	121
risch	Expression too large to display	1394

[In] int(csc(x)/(a+cos(x)\*b+c\*cos(x)^2),x,method=\_RETURNVERBOSE)

[Out]  $\frac{1}{(a-b+c)(a+b+c)} * \left( \frac{1}{2} * b * \ln(a + \cos(x) * b + c * \cos(x)^2) + 2 * (-a * c + \frac{1}{2} * b^2 - c^2) / (4 * a * c - b^2)^{(1/2)} * \arctan\left(\frac{b + 2 * c * \cos(x)}{(4 * a * c - b^2)^{(1/2)}}\right) - \frac{1}{(2 * a - 2 * b + 2 * c)} * \ln(1 + \cos(x)) + \frac{1}{(2 * a + 2 * b + 2 * c)} * \ln(\cos(x) - 1) \right)$

## Fricas [A] (verification not implemented)

none

Time = 0.68 (sec) , antiderivative size = 470, normalized size of antiderivative = 3.64

$$\int \frac{\csc(x)}{a + b \cos(x) + c \cos^2(x)} dx$$

$$= \frac{\left[ \frac{(b^2 - 2ac - 2c^2)\sqrt{b^2 - 4ac} \log\left(-\frac{2c^2 \cos(x)^2 + 2bc \cos(x) + b^2 - 2ac + \sqrt{b^2 - 4ac}(2c \cos(x) + b)}{c \cos(x)^2 + b \cos(x) + a}\right) - (b^3 - 4abc) \log(c \cos(x)^2 + b \cos(x) + a)}{2(a^2b^2 - b^4 - 4ac^3)} \right] - \frac{2(b^2 - 2ac - 2c^2)\sqrt{-b^2 + 4ac} \arctan\left(-\frac{\sqrt{-b^2 + 4ac}(2c \cos(x) + b)}{b^2 - 4ac}\right) - (b^3 - 4abc) \log(c \cos(x)^2 + b \cos(x) + a)}{2(a^2b^2 - b^4 - 4ac^3)}}{2(a^2b^2 - b^4 - 4ac^3)}$$

[In] integrate(csc(x)/(a+b\*cos(x)+c\*cos(x)^2),x, algorithm="fricas")

[Out]  $[-\frac{1}{2} * ((b^2 - 2 * a * c - 2 * c^2) * \text{sqrt}(b^2 - 4 * a * c) * \log(-(2 * c^2 * \text{cos}(x))^2 + 2 * b * c * \text{cos}(x) + b^2 - 2 * a * c + \text{sqrt}(b^2 - 4 * a * c) * (2 * c * \text{cos}(x) + b))) / (c * \text{cos}(x)^2 + b * \text{cos}(x) + a) - (b^3 - 4 * a * b * c) * \log(c * \text{cos}(x)^2 + b * \text{cos}(x) + a) + (a * b^2 + b^3 - 4 * a * c^2 - (4 * a^2 + 4 * a * b - b^2) * c) * \log(1/2 * \text{cos}(x) + 1/2) - (a * b^2 - b^3 - 4 * a * c^2 - (4 * a^2 - 4 * a * b - b^2) * c) * \log(-1/2 * \text{cos}(x) + 1/2)) / (a^2 * b^2 - b^4 - 4 * a * c^3 - (8 * a^2 - b^2) * c^2 - 2 * (2 * a^3 - 3 * a * b^2) * c), -1/2 * (2 * (b^2 - 2$

$$\begin{aligned} & *a*c - 2*c^2)*\sqrt{-b^2 + 4*a*c}*\arctan(-\sqrt{-b^2 + 4*a*c}*(2*c*\cos(x) + b \\ & )/(b^2 - 4*a*c)) - (b^3 - 4*a*b*c)*\log(c*\cos(x)^2 + b*\cos(x) + a) + (a*b^2 \\ & + b^3 - 4*a*c^2 - (4*a^2 + 4*a*b - b^2)*c)*\log(1/2*\cos(x) + 1/2) - (a*b^2 - \\ & b^3 - 4*a*c^2 - (4*a^2 - 4*a*b - b^2)*c)*\log(-1/2*\cos(x) + 1/2))/(a^2*b^2 \\ & - b^4 - 4*a*c^3 - (8*a^2 - b^2)*c^2 - 2*(2*a^3 - 3*a*b^2)*c] \end{aligned}$$

## Sympy [F]

$$\int \frac{\csc(x)}{a + b \cos(x) + c \cos^2(x)} dx = \int \frac{\csc(x)}{a + b \cos(x) + c \cos^2(x)} dx$$

[In] integrate(csc(x)/(a+b\*cos(x)+c\*cos(x)\*\*2),x)

[Out] Integral(csc(x)/(a + b\*cos(x) + c\*cos(x)\*\*2), x)

## Maxima [F(-2)]

Exception generated.

$$\int \frac{\csc(x)}{a + b \cos(x) + c \cos^2(x)} dx = \text{Exception raised: ValueError}$$

[In] integrate(csc(x)/(a+b\*cos(x)+c\*cos(x)^2),x, algorithm="maxima")

[Out] Exception raised: ValueError >> Computation failed since Maxima requested a dditional constraints; using the 'assume' command before evaluation \*may\* help (example of legal syntax is 'assume(4\*a\*c-b^2>0)', see 'assume?' for more deta

## Giac [A] (verification not implemented)

none

Time = 0.28 (sec) , antiderivative size = 130, normalized size of antiderivative = 1.01

$$\begin{aligned} \int \frac{\csc(x)}{a + b \cos(x) + c \cos^2(x)} dx = & \frac{b \log(c \cos(x)^2 + b \cos(x) + a)}{2(a^2 - b^2 + 2ac + c^2)} \\ & + \frac{(b^2 - 2ac - 2c^2) \arctan\left(\frac{2c \cos(x) + b}{\sqrt{-b^2 + 4ac}}\right)}{(a^2 - b^2 + 2ac + c^2)\sqrt{-b^2 + 4ac}} \\ & - \frac{\log(\cos(x) + 1)}{2(a - b + c)} + \frac{\log(-\cos(x) + 1)}{2(a + b + c)} \end{aligned}$$

[In] integrate(csc(x)/(a+b\*cos(x)+c\*cos(x)^2),x, algorithm="giac")

[Out]  $\frac{1}{2}b \log(c \cos(x)^2 + b \cos(x) + a) / (a^2 - b^2 + 2ac + c^2) + (b^2 - 2ac - 2c^2) \arctan((2c \cos(x) + b) / \sqrt{-b^2 + 4ac}) / ((a^2 - b^2 + 2ac + c^2) \sqrt{-b^2 + 4ac}) - \frac{1}{2} \log(\cos(x) + 1) / (a - b + c) + \frac{1}{2} \log(-\cos(x) + 1) / (a + b + c)$

## Mupad [B] (verification not implemented)

Time = 5.48 (sec) , antiderivative size = 1003, normalized size of antiderivative = 7.78

$$\int \frac{\csc(x)}{a + b \cos(x) + c \cos^2(x)} dx = \frac{\ln(\cos(x) - 1)}{2(a + b + c)} - \frac{\ln(\cos(x) + 1)}{2(a - b + c)}$$


---


$$\ln \left( b c^2 + 4 c^3 \cos(x) + \frac{(a(4bc - 2c\sqrt{b^2 - 4ac}) - b^3 + b^2\sqrt{b^2 - 4ac} - 2c^2\sqrt{b^2 - 4ac}) (8ac^3 + \cos(x)(-3b^3c + 12bc^3 + 12abc^2) + 4c^4)}{(a(4bc + 2c\sqrt{b^2 - 4ac}) - b^3 - b^2\sqrt{b^2 - 4ac} + 2c^2\sqrt{b^2 - 4ac}) (8ac^3 + \cos(x)(-3b^3c + 12bc^3 + 12abc^2) + 4c^4)} \right)$$


---

[In] `int(1/(sin(x)*(a + b*cos(x) + c*cos(x)^2)),x)`

[Out]  $\log(\cos(x) - 1) / (2(a + b + c)) - \log(\cos(x) + 1) / (2(a - b + c)) - (\log(bc^2 + 4c^3 \cos(x) + ((a(4bc - 2c(b^2 - 4ac)^{1/2}) - b^3 + b^2(b^2 - 4ac)^{1/2}) - 2c^2(b^2 - 4ac)^{1/2})) * (8ac^3 + \cos(x)(12b^3c - 3b^3c + 12abc^2) + 4c^4 + 4a^2c^2 + 3b^2c^2 - ((a(4bc - 2c(b^2 - 4ac)^{1/2}) - b^3 + b^2(b^2 - 4ac)^{1/2}) - 2c^2(b^2 - 4ac)^{1/2})) * (4b^3c^4 + 4b^3c^2 + \cos(x)(8a^4c + 6b^4c + 8c^5 - 8a^2c^3 - 8a^3c^2 - 6b^2c^3 - 20ab^2c^2 + 2a^2b^2c) - 28a^2b^2c^2 - 24ab^2c^3 + 8a^2b^3c)) / (b^2(12ac + 2a^2 - 2b^2 + 2c^2) - 4ac(4ac + 2a^2 + 2c^2)) - ab^2c) / (b^2(12ac + 2a^2 - 2b^2 + 2c^2) - 4ac(4ac + 2a^2 + 2c^2))) * (a(4bc - 2c(b^2 - 4ac)^{1/2}) - b^3 + b^2(b^2 - 4ac)^{1/2}) - 2c^2(b^2 - 4ac)^{1/2})) / (b^2(12ac + 2a^2 - 2b^2 + 2c^2) - 4ac(4ac + 2a^2 + 2c^2)) - (\log(bc^2 + 4c^3 \cos(x) + ((a(4bc + 2c(b^2 - 4ac)^{1/2}) - b^3 - b^2(b^2 - 4ac)^{1/2}) + 2c^2(b^2 - 4ac)^{1/2})) * (8ac^3 + \cos(x)(12b^3c - 3b^3c + 12abc^2) + 4c^4 + 4a^2c^2 + 3b^2c^2 - ((a(4bc + 2c(b^2 - 4ac)^{1/2}) - b^3 - b^2(b^2 - 4ac)^{1/2}) + 2c^2(b^2 - 4ac)^{1/2})) * (4b^3c^4 + 4b^3c^2 + \cos(x)(8a^4c + 6b^4c + 8c^5 - 8a^2c^3 - 8a^3c^2 - 6b^2c^3 - 20ab^2c^2 + 2a^2b^2c) - 28a^2b^2c^2 - 24ab^2c^3 + 8a^2b^3c)) / (b^2(12ac + 2a^2 - 2b^2 + 2c^2) - 4ac(4ac + 2a^2 + 2c^2)) - ab^2c) / (b^2(12ac + 2a^2 - 2b^2 + 2c^2) - 4ac(4ac + 2a^2 + 2c^2))) * (a(4bc + 2c(b^2 - 4ac)^{1/2}) - b^3 - b^2(b^2 - 4ac)^{1/2}) +$

$$\frac{2c^2(b^2 - 4ac)^{1/2}}{b^2(12ac + 2a^2 - 2b^2 + 2c^2) - 4ac(4ac + 2a^2 + 2c^2)}$$

### 3.5 $\int \frac{\csc^3(x)}{a+b \cos(x)+c \cos^2(x)} dx$

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#### Optimal result

Integrand size = 19, antiderivative size = 205

$$\int \frac{\csc^3(x)}{a+b \cos(x)+c \cos^2(x)} dx = \frac{(b^4 + 2c^2(a+c)^2 - 2b^2c(2a+c)) \operatorname{arctanh}\left(\frac{b+2c \cos(x)}{\sqrt{b^2-4ac}}\right)}{\sqrt{b^2-4ac} (a^2 - b^2 + 2ac + c^2)^2} + \frac{(b - (a+c) \cos(x)) \csc^2(x)}{2(a-b+c)(a+b+c)} + \frac{(a+2b+3c) \log(1-\cos(x))}{4(a+b+c)^2} - \frac{(a-2b+3c) \log(1+\cos(x))}{4(a-b+c)^2} - \frac{b(b^2-2c(a+c)) \log(a+b \cos(x)+c \cos^2(x))}{2(a^2-b^2+2ac+c^2)^2}$$

```
[Out] 1/2*(b-(a+c)*cos(x))*csc(x)^2/(a-b+c)/(a+b+c)+1/4*(a+2*b+3*c)*ln(1-cos(x))/(a+b+c)^2-1/4*(a-2*b+3*c)*ln(1+cos(x))/(a-b+c)^2-1/2*b*(b^2-2*c*(a+c))*ln(a+b*cos(x)+c*cos(x)^2)/(a^2+2*a*c-b^2+c^2)^2+(b^4+2*c^2*(a+c)^2-2*b^2*c*(2*a+c))*arctanh((b+2*c*cos(x))/(-4*a*c+b^2)^(1/2))/(a^2+2*a*c-b^2+c^2)^2/(-4*a*c+b^2)^(1/2)
```

**Rubi [A] (verified)**

Time = 0.57 (sec) , antiderivative size = 205, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 9,  $\frac{\text{number of rules}}{\text{integrand size}} = 0.474$ , Rules used = {3340, 990, 1088, 648, 632, 212, 642, 647, 31}

$$\int \frac{\csc^3(x)}{a + b \cos(x) + c \cos^2(x)} dx = \frac{(-2b^2c(2a + c) + 2c^2(a + c)^2 + b^4) \operatorname{arctanh}\left(\frac{b+2c \cos(x)}{\sqrt{b^2-4ac}}\right)}{\sqrt{b^2-4ac}(a^2 + 2ac - b^2 + c^2)^2} - \frac{b(b^2 - 2c(a + c)) \log(a + b \cos(x) + c \cos^2(x))}{2(a^2 + 2ac - b^2 + c^2)^2} + \frac{(a + 2b + 3c) \log(1 - \cos(x))}{4(a + b + c)^2} - \frac{(a - 2b + 3c) \log(\cos(x) + 1)}{4(a - b + c)^2} + \frac{\csc^2(x)(b - (a + c) \cos(x))}{2(a - b + c)(a + b + c)}$$

[In] Int[Csc[x]^3/(a + b\*Cos[x] + c\*Cos[x]^2), x]

[Out] ((b^4 + 2\*c^2\*(a + c)^2 - 2\*b^2\*c\*(2\*a + c))\*ArcTanh[(b + 2\*c\*Cos[x])/Sqrt[b^2 - 4\*a\*c]])/(Sqrt[b^2 - 4\*a\*c]\*(a^2 - b^2 + 2\*a\*c + c^2)^2) + ((b - (a + c)\*Cos[x])\*Csc[x]^2)/(2\*(a - b + c)\*(a + b + c)) + ((a + 2\*b + 3\*c)\*Log[1 - Cos[x]])/(4\*(a + b + c)^2) - ((a - 2\*b + 3\*c)\*Log[1 + Cos[x]])/(4\*(a - b + c)^2) - (b\*(b^2 - 2\*c\*(a + c))\*Log[a + b\*Cos[x] + c\*Cos[x]^2])/(2\*(a^2 - b^2 + 2\*a\*c + c^2)^2)

Rule 31

Int[((a\_) + (b\_.)\*(x\_))^-1, x\_Symbol] :> Simp[Log[RemoveContent[a + b\*x, x]]/b, x] /; FreeQ[{a, b}, x]

Rule 212

Int[((a\_) + (b\_.)\*(x\_)^2)^-1, x\_Symbol] :> Simp[(1/(Rt[a, 2]\*Rt[-b, 2]))\*ArcTanh[Rt[-b, 2]\*(x/Rt[a, 2])], x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (GtQ[a, 0] || LtQ[b, 0])

Rule 632

Int[((a\_.) + (b\_.)\*(x\_) + (c\_.)\*(x\_)^2)^-1, x\_Symbol] :> Dist[-2, Subst[Int[1/Simp[b^2 - 4\*a\*c - x^2, x], x], x, b + 2\*c\*x], x] /; FreeQ[{a, b, c}, x] && NeQ[b^2 - 4\*a\*c, 0]

Rule 642

```
Int[((d_) + (e_)*(x_))/((a_) + (b_)*(x_) + (c_)*(x_)^2), x_Symbol] := S
imp[d*(Log[RemoveContent[a + b*x + c*x^2, x]]/b), x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

#### Rule 647

```
Int[((d_) + (e_)*(x_))/((a_) + (c_)*(x_)^2), x_Symbol] := With[{q = Rt[(-
a)*c, 2]}, Dist[e/2 + c*(d/(2*q)), Int[1/(-q + c*x), x], x] + Dist[e/2 - c*
(d/(2*q)), Int[1/(q + c*x), x], x]] /; FreeQ[{a, c, d, e}, x] && NiceSqrtQ[
(-a)*c]
```

#### Rule 648

```
Int[((d_) + (e_)*(x_))/((a_) + (b_)*(x_) + (c_)*(x_)^2), x_Symbol] := D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] && !NiceSqrtQ[b^2 - 4*a*c]
```

#### Rule 990

```
Int[((a_) + (c_)*(x_)^2)^(p_)*((d_) + (e_)*(x_) + (f_)*(x_)^2)^(q_), x
_Symbol] := Simp[(2*a*c^2*e + c*(2*c^2*d - c*(2*a*f))*x*(a + c*x^2)^(p + 1
)*((d + e*x + f*x^2)^(q + 1)/((-4*a*c)*(a*c*e^2 + (c*d - a*f)^2)*(p + 1))),
x] - Dist[1/((-4*a*c)*(a*c*e^2 + (c*d - a*f)^2)*(p + 1)), Int[(a + c*x^2)^(
p + 1)*(d + e*x + f*x^2)^q*Simp[2*c*((c*d - a*f)^2 - ((-a)*e)*(c*e))*(p +
1) - (2*c^2*d - c*(2*a*f))*(a*f*(p + 1) - c*d*(p + 2)) - e*(-2*a*c^2*e)*(p
+ q + 2) + (2*f*(2*a*c^2*e)*(p + q + 2) - (2*c^2*d - c*(2*a*f))*((-c)*e*(2*
p + q + 4)))*x + c*f*(2*c^2*d - c*(2*a*f))*(2*p + 2*q + 5)*x^2, x], x]
/; FreeQ[{a, c, d, e, f, q}, x] && NeQ[e^2 - 4*d*f, 0] && LtQ[p, -1] && NeQ
[a*c*e^2 + (c*d - a*f)^2, 0] && !(IntegerQ[p] && ILtQ[q, -1]) && !IGtQ[
q, 0]
```

#### Rule 1088

```
Int[((A_) + (B_)*(x_) + (C_)*(x_)^2)/(((a_) + (b_)*(x_) + (c_)*(x_)^2)
*((d_) + (f_)*(x_)^2)), x_Symbol] := With[{q = c^2*d^2 + b^2*d*f - 2*a*c*d
*f + a^2*f^2}, Dist[1/q, Int[(A*c^2*d - a*c*C*d + A*b^2*f - a*b*B*f - a*A*c
*f + a^2*C*f + c*(B*c*d - b*C*d + A*b*f - a*B*f)*x)/(a + b*x + c*x^2), x],
x] + Dist[1/q, Int[(c*C*d^2 + b*B*d*f - A*c*d*f - a*C*d*f + a*A*f^2 - f*(B*
c*d - b*C*d + A*b*f - a*B*f)*x)/(d + f*x^2), x], x] /; NeQ[q, 0] /; FreeQ[
{a, b, c, d, f, A, B, C}, x] && NeQ[b^2 - 4*a*c, 0]
```

#### Rule 3340

```
Int[((a_) + (b_)*(cos[(d_) + (e_)*(x_)])*(f_))^(n_) + (c_)*(cos[(d_)
+ (e_)*(x_)])*(f_))^(n2_))^(p_)*sin[(d_) + (e_)*(x_)]^(m_), x_Symbol
```



```

] := Module[{g = FreeFactors[Cos[d + e*x], x]}, Dist[-g/e, Subst[Int[(1 - g
^2*x^2)^((m - 1)/2)*(a + b*(f*g*x)^n + c*(f*g*x)^(2*n))^p, x], x, Cos[d + e
*x]/g], x]] /; FreeQ[{a, b, c, d, e, f, n, p}, x] && EqQ[n2, 2*n] && Intege
rQ[(m - 1)/2]

```

Rubi steps

$$\begin{aligned}
\text{integral} &= -\text{Subst}\left(\int \frac{1}{(1-x^2)^2(a+bx+cx^2)} dx, x, \cos(x)\right) \\
&= \frac{(b-(a+c)\cos(x))\csc^2(x)}{2(a-b+c)(a+b+c)} - \frac{\text{Subst}\left(\int \frac{2(a^2-2b^2+3ac+2c^2)+2b(a-c)x+2c(a+c)x^2}{(1-x^2)(a+bx+cx^2)} dx, x, \cos(x)\right)}{4(a-b+c)(a+b+c)} \\
&= \frac{(b-(a+c)\cos(x))\csc^2(x)}{2(a-b+c)(a+b+c)} \\
&\quad - \frac{\text{Subst}\left(\int \frac{-2b^2(a-c)+2ac(a+c)+2c^2(a+c)+2a(a^2-2b^2+3ac+2c^2)+2c(a^2-2b^2+3ac+2c^2)+(2ab(a-c)+2b(a-c)c-2bc(a+c)-2b^2c)}{1-x^2} dx, x, \cos(x)\right)}{4(a-b+c)^2(a+b+c)^2} \\
&\quad - \frac{\text{Subst}\left(\int \frac{2ab^2(a-c)-2a^2c(a+c)-2ac^2(a+c)-2b^2(a^2-2b^2+3ac+2c^2)+2ac(a^2-2b^2+3ac+2c^2)+2c^2(a^2-2b^2+3ac+2c^2)+c(2ab(a-c)+2b(a-c)c-2bc(a+c)-2b^2c)}{a+bx+cx^2} dx, x, \cos(x)\right)}{4(a-b+c)^2(a+b+c)^2} \\
&= \frac{(b-(a+c)\cos(x))\csc^2(x)}{2(a-b+c)(a+b+c)} + \frac{(a-2b+3c)\text{Subst}\left(\int \frac{1}{-1-x} dx, x, \cos(x)\right)}{4(a-b+c)^2} \\
&\quad - \frac{(a+2b+3c)\text{Subst}\left(\int \frac{1}{1-x} dx, x, \cos(x)\right)}{4(a+b+c)^2} \\
&\quad - \frac{(b(b^2-2c(a+c)))\text{Subst}\left(\int \frac{b+2cx}{a+bx+cx^2} dx, x, \cos(x)\right)}{2(a-b+c)^2(a+b+c)^2} \\
&\quad - \frac{(b^4+2c^2(a+c)^2-2b^2c(2a+c))\text{Subst}\left(\int \frac{1}{a+bx+cx^2} dx, x, \cos(x)\right)}{2(a-b+c)^2(a+b+c)^2} \\
&= \frac{(b-(a+c)\cos(x))\csc^2(x)}{2(a-b+c)(a+b+c)} + \frac{(a+2b+3c)\log(1-\cos(x))}{4(a+b+c)^2} \\
&\quad - \frac{(a-2b+3c)\log(1+\cos(x))}{4(a-b+c)^2} - \frac{b(b^2-2c(a+c))\log(a+b\cos(x)+c\cos^2(x))}{2(a-b+c)^2(a+b+c)^2} \\
&\quad + \frac{(b^4+2c^2(a+c)^2-2b^2c(2a+c))\text{Subst}\left(\int \frac{1}{b^2-4ac-x^2} dx, x, b+2c\cos(x)\right)}{(a-b+c)^2(a+b+c)^2} \\
&= \frac{(b^4+2c^2(a+c)^2-2b^2c(2a+c))\text{arctanh}\left(\frac{b+2c\cos(x)}{\sqrt{b^2-4ac}}\right)}{(a-b+c)^2(a+b+c)^2\sqrt{b^2-4ac}} \\
&\quad + \frac{(b-(a+c)\cos(x))\csc^2(x)}{2(a-b+c)(a+b+c)} + \frac{(a+2b+3c)\log(1-\cos(x))}{4(a+b+c)^2} \\
&\quad - \frac{(a-2b+3c)\log(1+\cos(x))}{4(a-b+c)^2} - \frac{b(b^2-2c(a+c))\log(a+b\cos(x)+c\cos^2(x))}{2(a-b+c)^2(a+b+c)^2}
\end{aligned}$$

**Mathematica [C] (verified)**

Result contains complex when optimal does not.

Time = 1.76 (sec) , antiderivative size = 392, normalized size of antiderivative = 1.91

$$\int \frac{\csc^3(x)}{a + b \cos(x) + c \cos^2(x)} dx$$

$$= \frac{1}{8} \left( \frac{16i(b^3 - 2bc(a + c))x}{(a - b + c)^2(a + b + c)^2} + \frac{4i(a - 2b + 3c) \arctan(\tan(x))}{(a - b + c)^2} \right.$$

$$- \frac{4i(a + 2b + 3c) \arctan(\tan(x))}{(a + b + c)^2} - \frac{\csc^2\left(\frac{x}{2}\right)}{a + b + c} - \frac{2(a - 2b + 3c) \log\left(\cos^2\left(\frac{x}{2}\right)\right)}{(a - b + c)^2}$$

$$- \frac{4(b^4 + 2c^2(a + c)^2 - 2b^2c(2a + c) + b^3\sqrt{b^2 - 4ac} - 2bc(a + c)\sqrt{b^2 - 4ac}) \log(-b + \sqrt{b^2 - 4ac} - 2c \cos(x))}{\sqrt{b^2 - 4ac}(a^2 - b^2 + 2ac + c^2)^2}$$

$$- \frac{4(-b^4 - 2c^2(a + c)^2 + 2b^2c(2a + c) + b^3\sqrt{b^2 - 4ac} - 2bc(a + c)\sqrt{b^2 - 4ac}) \log(b + \sqrt{b^2 - 4ac} + 2c \cos(x))}{\sqrt{b^2 - 4ac}(a^2 - b^2 + 2ac + c^2)^2}$$

$$\left. + \frac{2(a + 2b + 3c) \log\left(\sin^2\left(\frac{x}{2}\right)\right)}{(a + b + c)^2} + \frac{\sec^2\left(\frac{x}{2}\right)}{a - b + c} \right)$$

[In] Integrate[Csc[x]^3/(a + b\*Cos[x] + c\*Cos[x]^2), x]

[Out] (((16\*I)\*(b^3 - 2\*b\*c\*(a + c))\*x)/((a - b + c)^2\*(a + b + c)^2) + ((4\*I)\*(a - 2\*b + 3\*c)\*ArcTan[Tan[x]])/(a - b + c)^2 - ((4\*I)\*(a + 2\*b + 3\*c)\*ArcTan[Tan[x]])/(a + b + c)^2 - Csc[x/2]^2/(a + b + c) - (2\*(a - 2\*b + 3\*c)\*Log[Cos[x/2]^2])/(a - b + c)^2 - (4\*(b^4 + 2\*c^2\*(a + c)^2 - 2\*b^2\*c\*(2\*a + c) + b^3\*Sqrt[b^2 - 4\*a\*c] - 2\*b\*c\*(a + c)\*Sqrt[b^2 - 4\*a\*c])\*Log[-b + Sqrt[b^2 - 4\*a\*c] - 2\*c\*Cos[x]])/(Sqrt[b^2 - 4\*a\*c]\*(a^2 - b^2 + 2\*a\*c + c^2)^2) - (4\*(-b^4 - 2\*c^2\*(a + c)^2 + 2\*b^2\*c\*(2\*a + c) + b^3\*Sqrt[b^2 - 4\*a\*c] - 2\*b\*c\*(a + c)\*Sqrt[b^2 - 4\*a\*c])\*Log[b + Sqrt[b^2 - 4\*a\*c] + 2\*c\*Cos[x]])/(Sqrt[b^2 - 4\*a\*c]\*(a^2 - b^2 + 2\*a\*c + c^2)^2) + (2\*(a + 2\*b + 3\*c)\*Log[Sin[x/2]^2])/(a + b + c)^2 + Sec[x/2]^2/(a - b + c))/8

**Maple [A] (verified)**

Time = 3.21 (sec) , antiderivative size = 241, normalized size of antiderivative = 1.18

method	result
default	$\frac{(2abc^2 - b^3c + 2bc^3) \ln(a + \cos(x)b + c(\cos^2(x)))}{2c} + \frac{2 \left( -a^2c^2 + 3ab^2c - 2ac^3 - b^4 + 2b^2c^2 - c^4 - \frac{(2abc^2 - b^3c + 2bc^3)b}{2c} \right) \arctan\left(\frac{b + 2c \cos(x)}{\sqrt{4ac - b^2}}\right)}{\sqrt{4ac - b^2} (a - b + c)^2 (a + b + c)^2} + \frac{4a}{(a - b + c)^2}$
risch	Expression too large to display

[In] `int(csc(x)^3/(a+cos(x)*b+c*cos(x)^2),x,method=_RETURNVERBOSE)`

[Out]  $1/(a-b+c)^2/(a+b+c)^2*(1/2*(2*a*b*c^2-b^3*c+2*b*c^3)/c*\ln(a+\cos(x)*b+c*\cos(x)^2)+2*(-a^2*c^2+3*a*b^2*c-2*a*c^3-b^4+2*b^2*c^2-c^4-1/2*(2*a*b*c^2-b^3*c+2*b*c^3)*b/c)/(4*a*c-b^2)^{(1/2)}*\arctan((b+2*c*\cos(x))/(4*a*c-b^2)^{(1/2)}))+1/(4*a-4*b+4*c)/(1+\cos(x))+1/4/(a-b+c)^2*(-a+2*b-3*c)*\ln(1+\cos(x))+1/(4*a+4*b+4*c)/(\cos(x)-1)+1/4*(a+2*b+3*c)/(a+b+c)^2*\ln(\cos(x)-1)$

## Fricas [B] (verification not implemented)

Leaf count of result is larger than twice the leaf count of optimal. 983 vs.  $2(194) = 388$ .

Time = 5.43 (sec) , antiderivative size = 1991, normalized size of antiderivative = 9.71

$$\int \frac{\csc^3(x)}{a + b \cos(x) + c \cos^2(x)} dx = \text{Too large to display}$$

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

[Out]  $[1/4*(2*a^2*b^3 - 2*b^5 - 8*a*b*c^3 - 2*(8*a^2*b - b^3)*c^2 + 2*(b^4 - 4*a*b^2*c + 4*a*c^3 + 2*c^4 + 2*(a^2 - b^2)*c^2 - (b^4 - 4*a*b^2*c + 4*a*c^3 + 2*c^4 + 2*(a^2 - b^2)*c^2)*\cos(x)^2)*\sqrt{b^2 - 4*a*c}*\log(-(2*c^2*\cos(x)^2 + 2*b*c*\cos(x) + b^2 - 2*a*c + \sqrt{b^2 - 4*a*c})*(2*c*\cos(x) + b))/(c*\cos(x)^2 + b*\cos(x) + a) - 4*(2*a^3*b - 3*a*b^3)*c - 2*(a^3*b^2 - a*b^4 - 4*a*c^4 - (12*a^2 - b^2)*c^3 - (12*a^3 - 7*a*b^2)*c^2 - (4*a^4 - 7*a^2*b^2 + b^4)*c)*\cos(x) - 2*(b^5 - 6*a*b^3*c + 8*a*b*c^3 + 2*(4*a^2*b - b^3)*c^2 - (b^5 - 6*a*b^3*c + 8*a*b*c^3 + 2*(4*a^2*b - b^3)*c^2)*\cos(x)^2)*\log(c*\cos(x)^2 + b*\cos(x) + a) - (a^3*b^2 - 3*a*b^4 - 2*b^5 - 12*a*c^4 - (28*a^2 + 16*a*b - 3*b^2)*c^3 - (20*a^3 + 16*a^2*b - 11*a*b^2 - 4*b^3)*c^2 - (a^3*b^2 - 3*a*b^4 - 2*b^5 - 12*a*c^4 - (28*a^2 + 16*a*b - 3*b^2)*c^3 - (20*a^3 + 16*a^2*b - 11*a*b^2 - 4*b^3)*c^2 - (4*a^4 - 17*a^2*b^2 - 12*a*b^3 + b^4)*c)*\cos(x)^2 - (4*a^4 - 17*a^2*b^2 - 12*a*b^3 + b^4)*c)*\log(1/2*\cos(x) + 1/2) + (a^3*b^2 - 3*a*b^4 + 2*b^5 - 12*a*c^4 - (28*a^2 - 16*a*b - 3*b^2)*c^3 - (20*a^3 - 16*a^2*b - 11*a*b^2 + 4*b^3)*c^2 - (4*a^4 - 17*a^2*b^2 + 12*a*b^3 + b^4)*c)*\cos(x)^2 - (4*a^4 - 17*a^2*b^2 + 12*a*b^3 + b^4)*c)*\log(-1/2*\cos(x) + 1/2)]/(a^4*b^2 - 2*a^2*b^4 + b^6 - 4*a*c^5 - (16*a^2 - b^2)*c^4 - 12*(2*a^3 - a*b^2)*c^3 - 2*(8*a^4 - 11*a^2*b^2 + b^4)*c^2 - (a^4*b^2 - 2*a^2*b^4 + b^6 - 4*a*c^5 - (16*a^2 - b^2)*c^4 - 12*(2*a^3 - a*b^2)*c^3 - 2*(8*a^4 - 11*a^2*b^2 + b^4)*c^2 - 4*(a^5 - 3*a^3*b^2 + 2*a*b^4)*c)*\cos(x)^2 - 4*(a^5 - 3*a^3*b^2 + 2*a*b^4)*c), 1/4*(2*a^2*b^3 - 2*b^5 - 8*a*b*c^3 - 2*(8*a^2*b - b^3)*c^2 + 4*(b^4 - 4*a*b^2*c + 4*a*c^3 + 2*c^4 + 2*(a^2 - b^2)*c^2)*\cos(x)^2)*\sqrt{-b^2 + 4*a*c}*\arctan(-\sqrt{-b^2 + 4*a*c}*(2*c*\cos(x) + b)/(b^2 - 4*a*c)) - 4*(2*a^3*b - 3*a*b^3)*c - 2*(a^3*b^2 - a*b^4 - 4*a*c^4 - (12*a^2 - b^2)*c^3 - (12*a^3 - 7*a*b^2)*c^2 - (4*a^4 - 7*a^2*b^2$

$$\begin{aligned}
& 2 + b^4)c) \cdot \cos(x) - 2 \cdot (b^5 - 6ab^3c + 8a^2b^2c^2 + 2(4a^2b - b^3)c^2 \\
& - (b^5 - 6ab^3c + 8a^2b^2c^2 + 2(4a^2b - b^3)c^2) \cdot \cos(x)^2) \cdot \log(c \cos(x)^2 + b \cos(x) + a) - (a^3b^2 - 3a^2b^3 - 2b^5 - 12ac^4 - (28a^2 + \\
& 16ab - 3b^2)c^3 - (20a^3 + 16a^2b - 11ab^2 - 4b^3)c^2 - (a^3b^2 - 3a^2b^3 - \\
& 2b^5 - 12ac^4 - (28a^2 + 16ab - 3b^2)c^3 - (20a^3 + 16a^2b - 11ab^2 - 4b^3)c^2 - \\
& (4a^4 - 17a^2b^2 - 12ab^3 + b^4)c) \cdot \cos(x)^2 - (4a^4 - 17a^2b^2 - 12ab^3 + b^4)c) \cdot \log(1/2 \cos(x) + 1/2) + \\
& (a^3b^2 - 3a^2b^3 + 2b^5 - 12ac^4 - (28a^2 - 16ab - 3b^2)c^3 - (20a^3 - 16a^2b - \\
& 11ab^2 + 4b^3)c^2 - (a^3b^2 - 3a^2b^3 + 2b^5 - 12ac^4 - (28a^2 - 16ab - 3b^2)c^3 - \\
& (20a^3 - 16a^2b - 11ab^2 + 4b^3)c^2 - (4a^4 - 17a^2b^2 + 12ab^3 + b^4)c) \cdot \cos(x)^2 - (4a^4 - 17a^2b^2 + \\
& 12ab^3 + b^4)c) \cdot \log(-1/2 \cos(x) + 1/2)) / (a^4b^2 - 2a^2b^4 + b^6 - 4a^2c^5 - \\
& (16a^2 - b^2)c^4 - 12(2a^3 - ab^2)c^3 - 2(8a^4 - 11a^2b^2 + b^4)c^2 - (a^4b^2 - 2a^2b^4 + \\
& b^6 - 4a^2c^5 - (16a^2 - b^2)c^4 - 12(2a^3 - ab^2)c^3 - 2(8a^4 - 11a^2b^2 + b^4)c^2 - \\
& 4(a^5 - 3a^3b^2 + 2ab^4)c) \cdot \cos(x)^2 - 4(a^5 - 3a^3b^2 + 2ab^4)c)
\end{aligned}$$

## Sympy [F]

$$\int \frac{\csc^3(x)}{a + b \cos(x) + c \cos^2(x)} dx = \int \frac{\csc^3(x)}{a + b \cos(x) + c \cos^2(x)} dx$$

[In] integrate(csc(x)\*\*3/(a+b\*cos(x)+c\*cos(x)\*\*2),x)

[Out] Integral(csc(x)\*\*3/(a + b\*cos(x) + c\*cos(x)\*\*2), x)

## Maxima [F(-2)]

Exception generated.

$$\int \frac{\csc^3(x)}{a + b \cos(x) + c \cos^2(x)} dx = \text{Exception raised: ValueError}$$

[In] integrate(csc(x)^3/(a+b\*cos(x)+c\*cos(x)^2),x, algorithm="maxima")

[Out] Exception raised: ValueError >> Computation failed since Maxima requested additional constraints; using the 'assume' command before evaluation \*may\* help (example of legal syntax is 'assume(4\*a\*c-b^2>0)', see 'assume?' for more data

**Giac [A] (verification not implemented)**

none

Time = 0.30 (sec) , antiderivative size = 378, normalized size of antiderivative = 1.84

$$\int \frac{\csc^3(x)}{a + b \cos(x) + c \cos^2(x)} dx$$

$$= -\frac{(b^3 - 2abc - 2bc^2) \log(c \cos(x)^2 + b \cos(x) + a)}{2(a^4 - 2a^2b^2 + b^4 + 4a^3c - 4ab^2c + 6a^2c^2 - 2b^2c^2 + 4ac^3 + c^4)}$$

$$- \frac{(a - 2b + 3c) \log(\cos(x) + 1)}{4(a^2 - 2ab + b^2 + 2ac - 2bc + c^2)} + \frac{(a + 2b + 3c) \log(-\cos(x) + 1)}{4(a^2 + 2ab + b^2 + 2ac + 2bc + c^2)}$$

$$- \frac{(b^4 - 4ab^2c + 2a^2c^2 - 2b^2c^2 + 4ac^3 + 2c^4) \arctan\left(\frac{2c \cos(x) + b}{\sqrt{-b^2 + 4ac}}\right)}{(a^4 - 2a^2b^2 + b^4 + 4a^3c - 4ab^2c + 6a^2c^2 - 2b^2c^2 + 4ac^3 + c^4)\sqrt{-b^2 + 4ac}}$$

$$- \frac{a^2b - b^3 + 2abc + bc^2 - (a^3 - ab^2 + 3a^2c - b^2c + 3ac^2 + c^3) \cos(x)}{2(a + b + c)^2(a - b + c)^2(\cos(x) + 1)(\cos(x) - 1)}$$

[In] integrate(csc(x)^3/(a+b\*cos(x)+c\*cos(x)^2),x, algorithm="giac")

```
[Out] -1/2*(b^3 - 2*a*b*c - 2*b*c^2)*log(c*cos(x)^2 + b*cos(x) + a)/(a^4 - 2*a^2*b^2 + b^4 + 4*a^3*c - 4*a*b^2*c + 6*a^2*c^2 - 2*b^2*c^2 + 4*a*c^3 + c^4) - 1/4*(a - 2*b + 3*c)*log(cos(x) + 1)/(a^2 - 2*a*b + b^2 + 2*a*c - 2*b*c + c^2) + 1/4*(a + 2*b + 3*c)*log(-cos(x) + 1)/(a^2 + 2*a*b + b^2 + 2*a*c + 2*b*c + c^2) - (b^4 - 4*a*b^2*c + 2*a^2*c^2 - 2*b^2*c^2 + 4*a*c^3 + 2*c^4)*arctan((2*c*cos(x) + b)/sqrt(-b^2 + 4*a*c))/((a^4 - 2*a^2*b^2 + b^4 + 4*a^3*c - 4*a*b^2*c + 6*a^2*c^2 - 2*b^2*c^2 + 4*a*c^3 + c^4)*sqrt(-b^2 + 4*a*c)) - 1/2*(a^2*b - b^3 + 2*a*b*c + b*c^2 - (a^3 - a*b^2 + 3*a^2*c - b^2*c + 3*a*c^2 + c^3)*cos(x))/((a + b + c)^2*(a - b + c)^2*(cos(x) + 1)*(cos(x) - 1))
```

**Mupad [B] (verification not implemented)**

Time = 21.56 (sec) , antiderivative size = 2742, normalized size of antiderivative = 13.38

$$\int \frac{\csc^3(x)}{a + b \cos(x) + c \cos^2(x)} dx = \text{Too large to display}$$

[In] int(1/(sin(x)^3\*(a + b\*cos(x) + c\*cos(x)^2)),x)

```
[Out] (b/(2*(2*a*c + a^2 - b^2 + c^2)) - (cos(x)*(a + c))/(2*(2*a*c + a^2 - b^2 + c^2)))/sin(x)^2 - log(cos(x) + 1)*(1/(4*(a - b + c)) - (b/4 - c/2)/(a - b + c)^2) + log(cos(x) - 1)*((b/4 + c/2)/(a + b + c)^2 + 1/(4*(a + b + c))) - (log((c^4*(4*a*c + a^2 - 4*b^2 + 3*c^2))/(4*(2*a*c + a^2 - b^2 + c^2)^2) - (b*c^5*cos(x))/(2*a*c + a^2 - b^2 + c^2)^2 - (((((c*(a*b^4 + 28*a*c^4 + 4*a^4*c - 5*b^4*c + 8*c^5 - a^3*b^2 + 36*a^2*c^3 + 20*a^3*c^2 + 5*b^2*c^3 - 3
```

$$\begin{aligned}
& *a*b^2*c^2 - 9*a^2*b^2*c)) / (2*(2*a*c + a^2 - b^2 + c^2)) - (2*c*((b^4*(b^2 \\
& - 4*a*c)^{(1/2)})/2 - b^5/2 + c^4*(b^2 - 4*a*c)^{(1/2)} + b^3*c^2 + 2*a*c^3*(b^2 \\
& - 4*a*c)^{(1/2)} - 4*a^2*b*c^2 + a^2*c^2*(b^2 - 4*a*c)^{(1/2)} - b^2*c^2*(b^2 \\
& - 4*a*c)^{(1/2)} - 4*a*b*c^3 + 3*a*b^3*c - 2*a*b^2*c*(b^2 - 4*a*c)^{(1/2}))* (4 \\
& *a*b^3 + 2*b*c^3 + 2*b^3*c + 3*b^4*\cos(x) + 4*c^4*\cos(x) + 4*a*c^3*\cos(x) - \\
& 4*a^3*c*\cos(x) + a^2*b^2*\cos(x) - 4*a^2*c^2*\cos(x) - 3*b^2*c^2*\cos(x) - 12 \\
& *a*b*c^2 - 14*a^2*b*c - 10*a*b^2*c*\cos(x)) / ((4*a*c - b^2)*(2*a*c + a^2 - b \\
& ^2 + c^2)^2) + (b*c*\cos(x)*(36*a*c^3 + 4*a^3*c + 3*b^4 + 16*c^4 - a^2*b^2 + \\
& 24*a^2*c^2 - 13*b^2*c^2 - 18*a*b^2*c)) / (2*a*c + a^2 - b^2 + c^2))* ((b^4*(b \\
& ^2 - 4*a*c)^{(1/2)})/2 - b^5/2 + c^4*(b^2 - 4*a*c)^{(1/2)} + b^3*c^2 + 2*a*c^3* \\
& (b^2 - 4*a*c)^{(1/2)} - 4*a^2*b*c^2 + a^2*c^2*(b^2 - 4*a*c)^{(1/2)} - b^2*c^2*( \\
& b^2 - 4*a*c)^{(1/2)} - 4*a*b*c^3 + 3*a*b^3*c - 2*a*b^2*c*(b^2 - 4*a*c)^{(1/2} \\
& )) / ((4*a*c - b^2)*(2*a*c + a^2 - b^2 + c^2)^2) - (b*c*(2*a*b^4 - 20*a*c^4 + \\
& 3*a^4*c - 6*b^4*c + 7*c^5 - a^3*b^2 - 26*a^2*c^3 + 4*a^3*c^2 + 23*a*b^2*c^2 \\
& - 6*a^2*b^2*c)) / (4*(2*a*c + a^2 - b^2 + c^2)^2) + (c*\cos(x)*(64*a*c^5 + 26 \\
& *c^6 + a^2*b^4 + 52*a^2*c^4 + 16*a^3*c^3 + 2*a^4*c^2 - 18*b^2*c^4 + 9*b^4*c \\
& ^2 - 32*a*b^2*c^3 - 4*a^3*b^2*c - 2*a^2*b^2*c^2 - 2*a*b^4*c)) / (4*(2*a*c + a \\
& ^2 - b^2 + c^2)^2))* ((b^4*(b^2 - 4*a*c)^{(1/2)})/2 - b^5/2 + c^4*(b^2 - 4*a*c \\
& )^{(1/2)} + b^3*c^2 + 2*a*c^3*(b^2 - 4*a*c)^{(1/2)} - 4*a^2*b*c^2 + a^2*c^2*(b^ \\
& 2 - 4*a*c)^{(1/2)} - b^2*c^2*(b^2 - 4*a*c)^{(1/2)} - 4*a*b*c^3 + 3*a*b^3*c - 2* \\
& a*b^2*c*(b^2 - 4*a*c)^{(1/2}))* / ((4*a*c - b^2)*(2*a*c + a^2 - b^2 + c^2)^2))* \\
& (b^3*(3*a*c + c^2) - b^2*(c^2*(b^2 - 4*a*c)^{(1/2)} + 2*a*c*(b^2 - 4*a*c)^{(1/ \\
& 2)) - b*(4*a*c^3 + 4*a^2*c^2) - b^5/2 + (b^4*(b^2 - 4*a*c)^{(1/2)})/2 + c^4*( \\
& b^2 - 4*a*c)^{(1/2)} + 2*a*c^3*(b^2 - 4*a*c)^{(1/2)} + a^2*c^2*(b^2 - 4*a*c)^{(1 \\
& /2}))/ (4*a*c^5 + 4*a^5*c - b^6 + 2*a^2*b^4 - a^4*b^2 + 16*a^2*c^4 + 24*a^3* \\
& c^3 + 16*a^4*c^2 - b^2*c^4 + 2*b^4*c^2 - 12*a*b^2*c^3 - 12*a^3*b^2*c - 22*a \\
& ^2*b^2*c^2 + 8*a*b^4*c) + (\log((c^4*(4*a*c + a^2 - 4*b^2 + 3*c^2)) / (4*(2*a* \\
& c + a^2 - b^2 + c^2)^2) - (b*c^5*\cos(x)) / (2*a*c + a^2 - b^2 + c^2)^2 - ((( \\
& (c*(a*b^4 + 28*a*c^4 + 4*a^4*c - 5*b^4*c + 8*c^5 - a^3*b^2 + 36*a^2*c^3 + 2 \\
& 0*a^3*c^2 + 5*b^2*c^3 - 3*a*b^2*c^2 - 9*a^2*b^2*c)) / (2*(2*a*c + a^2 - b^2 + \\
& c^2)) + (2*c*(b^5/2 + (b^4*(b^2 - 4*a*c)^{(1/2)})/2 + c^4*(b^2 - 4*a*c)^{(1/2} \\
& ) - b^3*c^2 + 2*a*c^3*(b^2 - 4*a*c)^{(1/2)} + 4*a^2*b*c^2 + a^2*c^2*(b^2 - 4* \\
& a*c)^{(1/2)} - b^2*c^2*(b^2 - 4*a*c)^{(1/2)} + 4*a*b*c^3 - 3*a*b^3*c - 2*a*b^2* \\
& c*(b^2 - 4*a*c)^{(1/2}))* (4*a*b^3 + 2*b*c^3 + 2*b^3*c + 3*b^4*\cos(x) + 4*c^4* \\
& \cos(x) + 4*a*c^3*\cos(x) - 4*a^3*c*\cos(x) + a^2*b^2*\cos(x) - 4*a^2*c^2*\cos(x) \\
& ) - 3*b^2*c^2*\cos(x) - 12*a*b*c^2 - 14*a^2*b*c - 10*a*b^2*c*\cos(x)) / ((4*a* \\
& c - b^2)*(2*a*c + a^2 - b^2 + c^2)^2) + (b*c*\cos(x)*(36*a*c^3 + 4*a^3*c + 3 \\
& *b^4 + 16*c^4 - a^2*b^2 + 24*a^2*c^2 - 13*b^2*c^2 - 18*a*b^2*c)) / (2*a*c + a \\
& ^2 - b^2 + c^2))* (b^5/2 + (b^4*(b^2 - 4*a*c)^{(1/2)})/2 + c^4*(b^2 - 4*a*c)^{( \\
& 1/2)} - b^3*c^2 + 2*a*c^3*(b^2 - 4*a*c)^{(1/2)} + 4*a^2*b*c^2 + a^2*c^2*(b^2 - \\
& 4*a*c)^{(1/2)} - b^2*c^2*(b^2 - 4*a*c)^{(1/2)} + 4*a*b*c^3 - 3*a*b^3*c - 2*a*b \\
& ^2*c*(b^2 - 4*a*c)^{(1/2}))/ ((4*a*c - b^2)*(2*a*c + a^2 - b^2 + c^2)^2) + (b \\
& *c*(2*a*b^4 - 20*a*c^4 + 3*a^4*c - 6*b^4*c + 7*c^5 - a^3*b^2 - 26*a^2*c^3 + \\
& 4*a^3*c^2 + 23*a*b^2*c^2 - 6*a^2*b^2*c)) / (4*(2*a*c + a^2 - b^2 + c^2)^2) - \\
& (c*\cos(x)*(64*a*c^5 + 26*c^6 + a^2*b^4 + 52*a^2*c^4 + 16*a^3*c^3 + 2*a^4*c
\end{aligned}$$

$$\begin{aligned}
&^2 - 18*b^2*c^4 + 9*b^4*c^2 - 32*a*b^2*c^3 - 4*a^3*b^2*c - 2*a^2*b^2*c^2 - \\
&2*a*b^4*c)/(4*(2*a*c + a^2 - b^2 + c^2)^2))*(b^{5/2} + (b^4*(b^2 - 4*a*c)^{(1/2)}))/2 + c^4*(b^2 - 4*a*c)^{(1/2)} - b^3*c^2 + 2*a*c^3*(b^2 - 4*a*c)^{(1/2)} + \\
&4*a^2*b*c^2 + a^2*c^2*(b^2 - 4*a*c)^{(1/2)} - b^2*c^2*(b^2 - 4*a*c)^{(1/2)} + 4 \\
&*a*b*c^3 - 3*a*b^3*c - 2*a*b^2*c*(b^2 - 4*a*c)^{(1/2)))/((4*a*c - b^2)*(2*a* \\
&c + a^2 - b^2 + c^2)^2))*(b*(4*a*c^3 + 4*a^2*c^2) - b^3*(3*a*c + c^2) - b^2 \\
&*(c^2*(b^2 - 4*a*c)^{(1/2)} + 2*a*c*(b^2 - 4*a*c)^{(1/2))} + b^{5/2} + (b^4*(b^2 \\
&- 4*a*c)^{(1/2)}))/2 + c^4*(b^2 - 4*a*c)^{(1/2)} + 2*a*c^3*(b^2 - 4*a*c)^{(1/2)} + \\
&a^2*c^2*(b^2 - 4*a*c)^{(1/2)))/(4*a*c^5 + 4*a^5*c - b^6 + 2*a^2*b^4 - a^4*b \\
&^2 + 16*a^2*c^4 + 24*a^3*c^3 + 16*a^4*c^2 - b^2*c^4 + 2*b^4*c^2 - 12*a*b^2* \\
&c^3 - 12*a^3*b^2*c - 22*a^2*b^2*c^2 + 8*a*b^4*c)
\end{aligned}$$

### 3.6 $\int \frac{\sin^4(x)}{a+b \cos(x)+c \cos^2(x)} dx$

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Maple [A] (verified)	68
Fricas [B] (verification not implemented)	68
Sympy [F(-1)]	68
Maxima [F]	69
Giac [B] (verification not implemented)	69
Mupad [B] (verification not implemented)	75

#### Optimal result

Integrand size = 19, antiderivative size = 388

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

$$+ \frac{2(b^2(b^2 - 2c(a+c)) - b\sqrt{b^2 - 4ac}(b^2 - 2c(a+c)) - 2c(ab^2 - c(a+c)^2)) \arctan\left(\frac{\sqrt{b-2c-\sqrt{b^2-4ac}} \tan(\frac{x}{2})}{\sqrt{b+2c-\sqrt{b^2-4ac}}}\right)}{c^3 \sqrt{b^2 - 4ac} \sqrt{b-2c-\sqrt{b^2-4ac}} \sqrt{b+2c-\sqrt{b^2-4ac}}}$$

$$- \frac{2(b^4 + 2c^2(a+c)^2 - 2b^2c(2a+c) + b^3\sqrt{b^2 - 4ac} - 2bc(a+c)\sqrt{b^2 - 4ac}) \arctan\left(\frac{\sqrt{b-2c+\sqrt{b^2-4ac}} \tan(\frac{x}{2})}{\sqrt{b+2c+\sqrt{b^2-4ac}}}\right)}{c^3 \sqrt{b^2 - 4ac} \sqrt{b-2c+\sqrt{b^2-4ac}} \sqrt{b+2c+\sqrt{b^2-4ac}}}$$

$$- \frac{b \sin(x)}{c^2} + \frac{\cos(x) \sin(x)}{2c}$$

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



**Rubi [A] (verified)**

Time = 11.37 (sec) , antiderivative size = 386, normalized size of antiderivative = 0.99, number of steps used = 10, number of rules used = 7,  $\frac{\text{number of rules}}{\text{integrand size}} = 0.368$ , Rules used = {3348, 2717, 2715, 8, 3374, 2738, 211}

$$\int \frac{\sin^4(x)}{a + b \cos(x) + c \cos^2(x)} dx$$

$$= \frac{2(-2b^2c(a+c) - b\sqrt{b^2-4ac}(b^2-2c(a+c)) - 2c(ab^2 - c(a+c)^2) + b^4) \arctan\left(\frac{\tan(\frac{x}{2})\sqrt{-\sqrt{b^2-4ac}+b-2c}}{\sqrt{-\sqrt{b^2-4ac}+b+2c}}\right)}{c^3\sqrt{b^2-4ac}\sqrt{-\sqrt{b^2-4ac}+b-2c}\sqrt{-\sqrt{b^2-4ac}+b+2c}}$$

$$- \frac{2(-2b^2c(2a+c) - 2bc(a+c)\sqrt{b^2-4ac} + b^3\sqrt{b^2-4ac} + 2c^2(a+c)^2 + b^4) \arctan\left(\frac{\tan(\frac{x}{2})\sqrt{\sqrt{b^2-4ac}+b-2c}}{\sqrt{\sqrt{b^2-4ac}+b+2c}}\right)}{c^3\sqrt{b^2-4ac}\sqrt{\sqrt{b^2-4ac}+b-2c}\sqrt{\sqrt{b^2-4ac}+b+2c}}$$

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

[In] Int[Sin[x]^4/(a + b\*Cos[x] + c\*Cos[x]^2),x]

[Out] x/(2\*c) + ((b^2 - c\*(a + 2\*c))\*x)/c^3 + (2\*(b^4 - 2\*b^2\*c\*(a + c) - b\*Sqrt[b^2 - 4\*a\*c]\*(b^2 - 2\*c\*(a + c)) - 2\*c\*(a\*b^2 - c\*(a + c)^2))\*ArcTan[(Sqrt[b - 2\*c - Sqrt[b^2 - 4\*a\*c]]\*Tan[x/2])/Sqrt[b + 2\*c - Sqrt[b^2 - 4\*a\*c]])/(c^3\*Sqrt[b^2 - 4\*a\*c]\*Sqrt[b - 2\*c - Sqrt[b^2 - 4\*a\*c]]\*Sqrt[b + 2\*c - Sqrt[b^2 - 4\*a\*c]]) - (2\*(b^4 + 2\*c^2\*(a + c)^2 - 2\*b^2\*c\*(2\*a + c) + b^3\*Sqrt[b^2 - 4\*a\*c] - 2\*b\*c\*(a + c)\*Sqrt[b^2 - 4\*a\*c])\*ArcTan[(Sqrt[b - 2\*c + Sqrt[b^2 - 4\*a\*c]]\*Tan[x/2])/Sqrt[b + 2\*c + Sqrt[b^2 - 4\*a\*c]])/(c^3\*Sqrt[b^2 - 4\*a\*c]\*Sqrt[b - 2\*c + Sqrt[b^2 - 4\*a\*c]]\*Sqrt[b + 2\*c + Sqrt[b^2 - 4\*a\*c]]) - (b\*Sin[x])/c^2 + (Cos[x]\*Sin[x])/(2\*c)

Rule 8

Int[a\_, x\_Symbol] := Simp[a\*x, x] /; FreeQ[a, x]

Rule 211

Int[((a\_) + (b\_.)\*(x\_)^2)^(-1), x\_Symbol] := Simp[(Rt[a/b, 2]/a)\*ArcTan[x/Rt[a/b, 2]], x] /; FreeQ[{a, b}, x] && PosQ[a/b]

Rule 2715

Int[((b\_.)\*sin[(c\_.) + (d\_.)\*(x\_)])^(n\_), x\_Symbol] := Simp[(-b)\*Cos[c + d\*x]\*(b\*Sin[c + d\*x])^(n-1)/(d\*n), x] + Dist[b^2\*((n-1)/n), Int[(b\*Sin[c + d\*x])^(n-2), x], x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1] && IntegerQ[2\*n]

Rule 2717

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

### Rule 2738

```
Int[((a_) + (b_.)*sin[Pi/2 + (c_.) + (d_.)*(x_)])^(-1), x_Symbol] := With[{
e = FreeFactors[Tan[(c + d*x)/2], x]}, Dist[2*(e/d), Subst[Int[1/(a + b + (
a - b)*e^2*x^2), x], x, Tan[(c + d*x)/2]/e], x]] /; FreeQ[{a, b, c, d}, x]
&& NeQ[a^2 - b^2, 0]
```

### Rule 3348

```
Int[((a_.) + cos[(d_.) + (e_.)*(x_)])^(n_.)*(b_.) + cos[(d_.) + (e_.)*(x_)])^
(n2_.)*(c_.))^(p_.)*sin[(d_.) + (e_.)*(x_)^(m_.), x_Symbol] := Int[ExpandT
rig[(1 - cos[d + e*x]^2)^(m/2)*(a + b*cos[d + e*x]^n + c*cos[d + e*x]^(2*n)
)^p, x], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[n2, 2*n] && IntegerQ[m/2] &
& NeQ[b^2 - 4*a*c, 0] && IntegersQ[n, p]
```

### Rule 3374

```
Int[(cos[(d_.) + (e_.)*(x_)])*(B_.) + (A_.))/((a_.) + cos[(d_.) + (e_.)*(x_)
)*(b_.) + cos[(d_.) + (e_.)*(x_)^2*(c_.)], x_Symbol] := Module[{q = Rt[b^2
- 4*a*c, 2]}, Dist[B + (b*B - 2*A*c)/q, Int[1/(b + q + 2*c*Cos[d + e*x]), x
], x] + Dist[B - (b*B - 2*A*c)/q, Int[1/(b - q + 2*c*Cos[d + e*x]), x], x]]
/; FreeQ[{a, b, c, d, e, A, B}, x] && NeQ[b^2 - 4*a*c, 0]
```

### Rubi steps

$$\begin{aligned} \text{integral} &= \int \left( \frac{b^2 - c(a + 2c)}{c^3} - \frac{b \cos(x)}{c^2} + \frac{\cos^2(x)}{c} \right. \\ &\quad \left. + \frac{-ab^2 \left(1 - \frac{c(a+c)^2}{ab^2}\right) - b^3 \left(1 - \frac{2c(a+c)}{b^2}\right) \cos(x)}{c^3 (a + b \cos(x) + c \cos^2(x))} \right) dx \\ &= \frac{(b^2 - c(a + 2c))x}{c^3} + \frac{\int \frac{-ab^2 \left(1 - \frac{c(a+c)^2}{ab^2}\right) - b^3 \left(1 - \frac{2c(a+c)}{b^2}\right) \cos(x)}{a + b \cos(x) + c \cos^2(x)} dx}{c^3} - \frac{b \int \cos(x) dx}{c^2} + \frac{\int \cos^2(x) dx}{c} \\ &= \frac{(b^2 - c(a + 2c))x}{c^3} - \frac{b \sin(x)}{c^2} + \frac{\cos(x) \sin(x)}{2c} + \frac{\int 1 dx}{2c} \\ &\quad - \frac{(b^4 + 2c^2(a + c)^2 - 2b^2c(2a + c) + b\sqrt{b^2 - 4ac}(b^2 - 2c(a + c))) \int \frac{1}{b + \sqrt{b^2 - 4ac} + 2c \cos(x)} dx}{c^3 \sqrt{b^2 - 4ac}} \\ &\quad + \frac{(b^4 - 2b^2c(a + c) - b\sqrt{b^2 - 4ac}(b^2 - 2c(a + c)) - 2c(ab^2 - c(a + c)^2)) \int \frac{1}{b - \sqrt{b^2 - 4ac} + 2c \cos(x)} dx}{c^3 \sqrt{b^2 - 4ac}} \end{aligned}$$

$$\begin{aligned}
&= \frac{x}{2c} + \frac{(b^2 - c(a + 2c))x}{c^3} - \frac{b \sin(x)}{c^2} + \frac{\cos(x) \sin(x)}{2c} \\
&\quad \frac{(2(b^4 + 2c^2(a + c)^2 - 2b^2c(2a + c) + b\sqrt{b^2 - 4ac}(b^2 - 2c(a + c)))) \operatorname{Subst}\left(\int \frac{1}{b+2c+\sqrt{b^2-4ac}+(b-2c)}\right)}{c^3\sqrt{b^2 - 4ac}} \\
&\quad + \frac{(2(b^4 - 2b^2c(a + c) - b\sqrt{b^2 - 4ac}(b^2 - 2c(a + c)) - 2c(ab^2 - c(a + c)^2))) \operatorname{Subst}\left(\int \frac{1}{b+2c-\sqrt{b^2-4ac}}\right)}{c^3\sqrt{b^2 - 4ac}} \\
&= \frac{x}{2c} + \frac{(b^2 - c(a + 2c))x}{c^3} \\
&\quad \frac{2(b^4 - 2b^2c(a + c) - b\sqrt{b^2 - 4ac}(b^2 - 2c(a + c)) - 2c(ab^2 - c(a + c)^2)) \arctan\left(\frac{\sqrt{b-2c-\sqrt{b^2-4ac}}}{\sqrt{b+2c-\sqrt{b^2-4ac}}}\right)}{c^3\sqrt{b^2 - 4ac}\sqrt{b-2c-\sqrt{b^2-4ac}}\sqrt{b+2c-\sqrt{b^2-4ac}}} \\
&\quad + \frac{2(b^4 + 2c^2(a + c)^2 - 2b^2c(2a + c) + b\sqrt{b^2 - 4ac}(b^2 - 2c(a + c))) \arctan\left(\frac{\sqrt{b-2c+\sqrt{b^2-4ac}}\tan\left(\frac{x}{2}\right)}{\sqrt{b+2c+\sqrt{b^2-4ac}}}\right)}{c^3\sqrt{b^2 - 4ac}\sqrt{b-2c+\sqrt{b^2-4ac}}\sqrt{b+2c+\sqrt{b^2-4ac}}} \\
&\quad - \frac{b \sin(x)}{c^2} + \frac{\cos(x) \sin(x)}{2c}
\end{aligned}$$

### Mathematica [A] (verified)

Time = 0.65 (sec) , antiderivative size = 374, normalized size of antiderivative = 0.96

$$\int \frac{\sin^4(x)}{a + b \cos(x) + c \cos^2(x)} dx$$

$$\frac{4b^2x - 2c(2a + 3c)x + \frac{4\sqrt{2}(b^4 + 2c^2(a+c)^2 - 2b^2c(2a+c) + b^3\sqrt{b^2-4ac} - 2bc(a+c)\sqrt{b^2-4ac}) \operatorname{arctanh}\left(\frac{(b-2c+\sqrt{b^2-4ac})\tan\left(\frac{x}{2}\right)}{\sqrt{-2b^2+4c(a+c)-2b\sqrt{b^2-4ac}}}\right)}{\sqrt{b^2-4ac}\sqrt{-b^2+2c(a+c)-b\sqrt{b^2-4ac}}}}{\sqrt{b^2-4ac}\sqrt{-b^2+2c(a+c)-b\sqrt{b^2-4ac}}}$$

[In] Integrate[Sin[x]^4/(a + b\*Cos[x] + c\*Cos[x]^2),x]

[Out] (4\*b^2\*x - 2\*c\*(2\*a + 3\*c)\*x + (4\*Sqrt[2]\*(b^4 + 2\*c^2\*(a + c)^2 - 2\*b^2\*c\*(2\*a + c) + b^3\*Sqrt[b^2 - 4\*a\*c] - 2\*b\*c\*(a + c)\*Sqrt[b^2 - 4\*a\*c])\*ArcTan h[((b - 2\*c + Sqrt[b^2 - 4\*a\*c])\*Tan[x/2])/Sqrt[-2\*b^2 + 4\*c\*(a + c) - 2\*b\*Sqrt[b^2 - 4\*a\*c]])/(Sqrt[b^2 - 4\*a\*c]\*Sqrt[-b^2 + 2\*c\*(a + c) - b\*Sqrt[b^2 - 4\*a\*c]]) - (4\*Sqrt[2]\*(-b^4 - 2\*c^2\*(a + c)^2 + 2\*b^2\*c\*(2\*a + c) + b^3\*Sqrt[b^2 - 4\*a\*c] - 2\*b\*c\*(a + c)\*Sqrt[b^2 - 4\*a\*c])\*ArcTanh[(-b + 2\*c + Sqrt[b^2 - 4\*a\*c])\*Tan[x/2])/Sqrt[-2\*b^2 + 4\*c\*(a + c) + 2\*b\*Sqrt[b^2 - 4\*a\*c]])/(Sqrt[b^2 - 4\*a\*c]\*Sqrt[-b^2 + 2\*c\*(a + c) + b\*Sqrt[b^2 - 4\*a\*c]]) - 4\*b\*c\*Sin[x] + c^2\*Sin[2\*x])/(4\*c^3)

**Maple [A] (verified)**

Time = 5.47 (sec) , antiderivative size = 406, normalized size of antiderivative = 1.05

method	result
default	$2(a-b+c) \left( \frac{(\sqrt{-4ac+b^2} ac - \sqrt{-4ac+b^2} b^2 - \sqrt{-4ac+b^2} bc + \sqrt{-4ac+b^2} c^2 + 3cab + 2a c^2 - b^3 - b^2 c + b c^2 + 2c^3) \operatorname{arctanh} \left( \frac{(-a+b-c) \tan\left(\frac{x}{2}\right)}{\sqrt{(\sqrt{-4ac+b^2} - a + c)(a-b+c)}} \right)}{2\sqrt{-4ac+b^2} \sqrt{(\sqrt{-4ac+b^2} - a + c)(a-b+c)}} \right)$
risch	Expression too large to display

[In] `int(sin(x)^4/(a+cos(x)*b+c*cos(x)^2),x,method=_RETURNVERBOSE)`

[Out] 
$$\frac{2/c^3(a-b+c) \left( \frac{1}{2} \left( (-4ac+b^2)^{1/2} ac - (-4ac+b^2)^{1/2} b^2 - (-4ac+b^2)^{1/2} bc + (-4ac+b^2)^{1/2} c^2 + 3cab + 2ac^2 - b^3 - b^2c + bc^2 + 2c^3 \right) \operatorname{arctanh} \left( \frac{(-a+b-c) \tan(1/2*x)}{\sqrt{(\sqrt{-4ac+b^2} - a + c)(a-b+c)}} \right) \right)}{(-4ac+b^2)^{1/2} / \left( \left( (-4ac+b^2)^{1/2} - a + c \right) (a-b+c) \right)^{1/2} + 1/2 \left( (-4ac+b^2)^{1/2} ac - (-4ac+b^2)^{1/2} b^2 - (-4ac+b^2)^{1/2} bc + (-4ac+b^2)^{1/2} c^2 - 3cab - 2ac^2 + b^3 + b^2c - bc^2 - 2c^3 \right) / \left( (-4ac+b^2)^{1/2} / \left( \left( (-4ac+b^2)^{1/2} + a - c \right) (a-b+c) \right)^{1/2} \right) \operatorname{arctan} \left( \frac{(a-b+c) \tan(1/2*x)}{\sqrt{(\sqrt{-4ac+b^2} + a - c)(a-b+c)}} \right) - 2/c^3 \left( (cb + 1/2c^2) \tan(1/2*x)^3 + (cb - 1/2c^2) \tan(1/2*x) \right) / (1 + \tan(1/2*x)^2)^2 + 1/2(2ac - 2b^2 + 3c^2) \operatorname{arctan}(\tan(1/2*x))}$$

**Fricas [B] (verification not implemented)**

Leaf count of result is larger than twice the leaf count of optimal. 5045 vs.  $2(323) = 646$ .

Time = 2.40 (sec) , antiderivative size = 5045, normalized size of antiderivative = 13.00

$$\int \frac{\sin^4(x)}{a + b \cos(x) + c \cos^2(x)} dx = \text{Too large to display}$$

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

[Out] Too large to include

**Sympy [F(-1)]**

Timed out.

$$\int \frac{\sin^4(x)}{a + b \cos(x) + c \cos^2(x)} dx = \text{Timed out}$$

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

[Out] Timed out

**Maxima [F]**

$$\int \frac{\sin^4(x)}{a + b \cos(x) + c \cos^2(x)} dx = \int \frac{\sin(x)^4}{c \cos(x)^2 + b \cos(x) + a} dx$$

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

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

**Giac [B] (verification not implemented)**

Leaf count of result is larger than twice the leaf count of optimal. 11375 vs. 2(323) = 646.

Time = 2.80 (sec) , antiderivative size = 11375, normalized size of antiderivative = 29.32

$$\int \frac{\sin^4(x)}{a + b \cos(x) + c \cos^2(x)} dx = \text{Too large to display}$$

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

```

[Out] ((2*a^2*b^6 - 4*a*b^7 + 2*b^8 - 18*a^3*b^4*c + 38*a^2*b^5*c - 18*a*b^6*c -
2*b^7*c + 48*a^4*b^2*c^2 - 112*a^3*b^3*c^2 + 42*a^2*b^4*c^2 + 28*a*b^5*c^2
- 4*b^6*c^2 - 32*a^5*c^3 + 96*a^4*b*c^3 + 16*a^3*b^2*c^3 - 128*a^2*b^3*c^3
+ 26*a*b^4*c^3 + 6*b^5*c^3 - 96*a^4*c^4 + 192*a^3*b*c^4 - 16*a^2*b^2*c^4 -
48*a*b^3*c^4 - 2*b^4*c^4 - 96*a^3*c^5 + 96*a^2*b*c^5 + 16*a*b^2*c^5 - 32*a^
2*c^6 + 3*sqrt(a^2 - a*b + b*c - c^2 + sqrt(b^2 - 4*a*c))*(a - b + c))*sqrt(
b^2 - 4*a*c)*a^2*b^4 - 2*(b^2 - 4*a*c)*a^2*b^4 - 2*sqrt(a^2 - a*b + b*c - c
^2 + sqrt(b^2 - 4*a*c))*(a - b + c))*sqrt(b^2 - 4*a*c)*a*b^5 + 4*(b^2 - 4*a*
c)*a*b^5 - 5*sqrt(a^2 - a*b + b*c - c^2 + sqrt(b^2 - 4*a*c))*(a - b + c))*sq
rt(b^2 - 4*a*c)*b^6 - 2*(b^2 - 4*a*c)*b^6 - 15*sqrt(a^2 - a*b + b*c - c^2 +
sqrt(b^2 - 4*a*c))*(a - b + c))*sqrt(b^2 - 4*a*c)*a^3*b^2*c + 10*(b^2 - 4*a
*c)*a^3*b^2*c + 13*sqrt(a^2 - a*b + b*c - c^2 + sqrt(b^2 - 4*a*c))*(a - b +
c))*sqrt(b^2 - 4*a*c)*a^2*b^3*c - 22*(b^2 - 4*a*c)*a^2*b^3*c + 37*sqrt(a^2
- a*b + b*c - c^2 + sqrt(b^2 - 4*a*c))*(a - b + c))*sqrt(b^2 - 4*a*c)*a*b^4*
c + 10*(b^2 - 4*a*c)*a*b^4*c + sqrt(a^2 - a*b + b*c - c^2 + sqrt(b^2 - 4*a*
c))*(a - b + c))*sqrt(b^2 - 4*a*c)*b^5*c + 2*(b^2 - 4*a*c)*b^5*c + 12*sqrt(a
^2 - a*b + b*c - c^2 + sqrt(b^2 - 4*a*c))*(a - b + c))*sqrt(b^2 - 4*a*c)*a^4
*c^2 - 8*(b^2 - 4*a*c)*a^4*c^2 - 20*sqrt(a^2 - a*b + b*c - c^2 + sqrt(b^2 -
4*a*c))*(a - b + c))*sqrt(b^2 - 4*a*c)*a^3*b*c^2 + 24*(b^2 - 4*a*c)*a^3*b*c
^2 - 85*sqrt(a^2 - a*b + b*c - c^2 + sqrt(b^2 - 4*a*c))*(a - b + c))*sqrt(b^
2 - 4*a*c)*a^2*b^2*c^2 - 2*(b^2 - 4*a*c)*a^2*b^2*c^2 + 6*sqrt(a^2 - a*b + b
*c - c^2 + sqrt(b^2 - 4*a*c))*(a - b + c))*sqrt(b^2 - 4*a*c)*a*b^3*c^2 - 20*
(b^2 - 4*a*c)*a*b^3*c^2 + 6*sqrt(a^2 - a*b + b*c - c^2 + sqrt(b^2 - 4*a*c)*
(a - b + c))*sqrt(b^2 - 4*a*c)*b^4*c^2 + 4*(b^2 - 4*a*c)*b^4*c^2 + 68*sqrt(
a^2 - a*b + b*c - c^2 + sqrt(b^2 - 4*a*c))*(a - b + c))*sqrt(b^2 - 4*a*c)*a^
3*c^3 - 24*(b^2 - 4*a*c)*a^3*c^3 - 40*sqrt(a^2 - a*b + b*c - c^2 + sqrt(b^2
- 4*a*c))*(a - b + c))*sqrt(b^2 - 4*a*c)*a^2*b*c^3 + 48*(b^2 - 4*a*c)*a^2*b
*c^3 - 33*sqrt(a^2 - a*b + b*c - c^2 + sqrt(b^2 - 4*a*c))*(a - b + c))*sqrt(
b^2 - 4*a*c)*a*b^2*c^3 - 10*(b^2 - 4*a*c)*a*b^2*c^3 - 11*sqrt(a^2 - a*b + b
*c - c^2 + sqrt(b^2 - 4*a*c))*(a - b + c))*sqrt(b^2 - 4*a*c)*b^3*c^3 - 6*(b^
2 - 4*a*c)*b^3*c^3 + 36*sqrt(a^2 - a*b + b*c - c^2 + sqrt(b^2 - 4*a*c))*(a -
b + c))*sqrt(b^2 - 4*a*c)*a^2*c^4 - 24*(b^2 - 4*a*c)*a^2*c^4 + 44*sqrt(a^2
- a*b + b*c - c^2 + sqrt(b^2 - 4*a*c))*(a - b + c))*sqrt(b^2 - 4*a*c)*a*b*c
^4 + 24*(b^2 - 4*a*c)*a*b*c^4 + 5*sqrt(a^2 - a*b + b*c - c^2 + sqrt(b^2 - 4
*a*c))*(a - b + c))*sqrt(b^2 - 4*a*c)*b^2*c^4 + 2*(b^2 - 4*a*c)*b^2*c^4 - 20
*sqrt(a^2 - a*b + b*c - c^2 + sqrt(b^2 - 4*a*c))*(a - b + c))*sqrt(b^2 - 4*a
*c)*a*c^5 - 8*(b^2 - 4*a*c)*a*c^5)*c^2*abs(a - b + c) - (4*a^2*b^6*c - 4*b^
8*c - 36*a^3*b^4*c^2 - 4*a^2*b^5*c^2 + 44*a*b^6*c^2 + 4*b^7*c^2 + 96*a^4*b^
2*c^3 + 32*a^3*b^3*c^3 - 172*a^2*b^4*c^3 - 40*a*b^5*c^3 + 8*b^6*c^3 - 64*a^
5*c^4 - 64*a^4*b*c^4 + 288*a^3*b^2*c^4 + 128*a^2*b^3*c^4 - 76*a*b^4*c^4 - 4
*b^5*c^4 - 192*a^4*c^5 - 128*a^3*b*c^5 + 224*a^2*b^2*c^5 + 32*a*b^3*c^5 - 4
*b^4*c^5 - 192*a^3*c^6 - 64*a^2*b*c^6 + 32*a*b^2*c^6 - 64*a^2*c^7 + 3*sqrt(
a^2 - a*b + b*c - c^2 + sqrt(b^2 - 4*a*c))*(a - b + c))*a^3*b^4*c + sqrt(a^2
- a*b + b*c - c^2 + sqrt(b^2 - 4*a*c))*(a - b + c))*a^2*b^5*c - 7*sqrt(a^2
- a*b + b*c - c^2 + sqrt(b^2 - 4*a*c))*(a - b + c))*a*b^6*c - 5*sqrt(a^2 - a

```

$$\begin{aligned}
& *b + b*c - c^2 + \sqrt{b^2 - 4*a*c}*(a - b + c))*b^7*c - 15*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}*(a - b + c))*a^4*b^2*c^2 - 8*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}*(a - b + c))*a^3*b^3*c^2 + 51*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}*(a - b + c))*a^2*b^4*c^2 + 50*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}*(a - b + c))*a*b^5*c^2 + 6*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}*(a - b + c))*b^6*c^2 + 12*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}*(a - b + c))*a^5*c^3 + 16*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}*(a - b + c))*a^4*b*c^3 - 112*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}*(a - b + c))*a^3*b^2*c^3 - 156*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}*(a - b + c))*a^2*b^3*c^3 - 27*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}*(a - b + c))*a*b^4*c^3 + 5*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}*(a - b + c))*b^5*c^3 + 80*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}*(a - b + c))*a^4*c^4 + 144*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}*(a - b + c))*a^3*b*c^4 - 14*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}*(a - b + c))*a^2*b^2*c^4 - 48*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}*(a - b + c))*a*b^3*c^4 - 7*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}*(a - b + c))*b^4*c^4 + 104*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}*(a - b + c))*a^3*c^5 + 112*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}*(a - b + c))*a^2*b*c^5 + 24*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}*(a - b + c))*a*b^2*c^5 + 4*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}*(a - b + c))*b^3*c^5 + 16*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}*(a - b + c))*a^2*c^6 - 16*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}*(a - b + c))*a*b*c^6 + 5*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}*(a - b + c))*b^2*c^6 - 20*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}*(a - b + c))*a*c^7 - 4*(b^2 - 4*a*c)*a^2*b^4*c + 4*(b^2 - 4*a*c)*b^6*c + 20*(b^2 - 4*a*c)*a^3*b^2*c^2 + 4*(b^2 - 4*a*c)*a^2*b^3*c^2 - 28*(b^2 - 4*a*c)*a*b^4*c^2 - 4*(b^2 - 4*a*c)*b^5*c^2 - 16*(b^2 - 4*a*c)*a^4*c^3 - 16*(b^2 - 4*a*c)*a^3*b*c^3 + 60*(b^2 - 4*a*c)*a^2*b^2*c^3 + 24*(b^2 - 4*a*c)*a*b^3*c^3 - 8*(b^2 - 4*a*c)*b^4*c^3 - 48*(b^2 - 4*a*c)*a^3*c^4 - 32*(b^2 - 4*a*c)*a^2*b*c^4 + 44*(b^2 - 4*a*c)*a*b^2*c^4 + 4*(b^2 - 4*a*c)*b^3*c^4 - 48*(b^2 - 4*a*c)*a^2*c^5 - 16*(b^2 - 4*a*c)*a*b*c^5 + 4*(b^2 - 4*a*c)*b^2*c^5 - 16*(b^2 - 4*a*c)*a*c^6)*abs(a - b + c)*abs(c) + (2*a^3*b^5*c^2 - 4*a^2*b^6*c^2 + 2*a*b^7*c^2 - 14*a^4*b^3*c^3 + 30*a^3*b^4*c^3 - 16*a^2*b^5*c^3 + 2*a*b^6*c^3 - 2*b^7*c^3 + 24*a^5*b*c^4 - 60*a^4*b^2*c^4 + 32*a^3*b^3*c^4 - 6*a^2*b^4*c^4 + 10*a*b^5*c^4 + 2*b^6*c^4 + 16*a^5*c^5 - 16*a^3*b^2*c^5 + 4*a^2*b^3*c^5 - 22*a*b^4*c^5 + 4*b^5*c^5 + 32*a^4*c^6 - 48*a^3*b*c^6 + 56*a^2*b^2*c^6 - 16*a*b^3*c^6 - 2*b^4*c^6 + 16*a*b^2*c^7 - 6*b^3*c^7 - 32*a^2*c^8 + 24*a*b*c^8 + 4*b^2*c^8 - 16*a*c^9 + 3*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}*(a - b + c))*\sqrt{b^2 - 4*a*c})*a^3*b^3*c^2 - 2*(b^2 - 4*a*c)*a^3*b^3*c^2 - 2*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}*(a - b + c))*\sqrt{b^2 - 4*a*c})*a^2*b^4*c^2 + 4*(b^2 - 4*a*c)*a^2*b^4*c^2 - 5*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}*(a - b + c))*\sqrt{b^2 - 4*a*c})*a*b^5*c^2 - 2*(b^2 - 4*a*c)*a*b^5*c^2 - 9*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}*(a - b + c))*\sqrt{b^2 - 4*a*c})*a^4*b*c^3 + 6*(b^2 - 4*a*c)*a^4*b*c^3 + 9*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}*(a - b +
\end{aligned}$$

$$\begin{aligned} & c)) * \sqrt{b^2 - 4ac} * a^3 b^2 c^3 - 14(b^2 - 4ac) * a^3 b^2 c^3 + 24 \sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}} * (a - b + c) * \sqrt{b^2 - 4ac} * a^2 b^3 c^3 + 8(b^2 - 4ac) * a^2 b^3 c^3 + 3 \sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}} * (a - b + c) * \sqrt{b^2 - 4ac} * a^2 b^4 c^3 - 2(b^2 - 4ac) * a^2 b^4 c^3 + 5 \sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}} * (a - b + c) * \sqrt{b^2 - 4ac} * b^5 c^3 + 2(b^2 - 4ac) * b^5 c^3 - 6 \sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}} * (a - b + c) * \sqrt{b^2 - 4ac} * a^4 c^4 + 4(b^2 - 4ac) * a^4 c^4 - 32 \sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}} * (a - b + c) * \sqrt{b^2 - 4ac} * a^3 b c^4 - \sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}} * (a - b + c) * \sqrt{b^2 - 4ac} * a^2 b^2 c^4 - 2(b^2 - 4ac) * a^2 b^2 c^4 - 21 \sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}} * (a - b + c) * \sqrt{b^2 - 4ac} * a^2 b^3 c^4 - 2(b^2 - 4ac) * a^2 b^3 c^4 - \sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}} * (a - b + c) * \sqrt{b^2 - 4ac} * b^4 c^4 - 2(b^2 - 4ac) * b^4 c^4 - 28 \sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}} * (a - b + c) * \sqrt{b^2 - 4ac} * a^3 c^5 + 8(b^2 - 4ac) * a^3 c^5 + 34 \sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}} * (a - b + c) * \sqrt{b^2 - 4ac} * a^2 b c^5 - 12(b^2 - 4ac) * a^2 b c^5 - 9 \sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}} * (a - b + c) * \sqrt{b^2 - 4ac} * a^2 b^2 c^5 + 14(b^2 - 4ac) * a^2 b^2 c^5 - 6 \sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}} * (a - b + c) * \sqrt{b^2 - 4ac} * b^3 c^5 - 4(b^2 - 4ac) * b^3 c^5 + 16 \sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}} * (a - b + c) * \sqrt{b^2 - 4ac} * a^2 c^6 + \sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}} * (a - b + c) * \sqrt{b^2 - 4ac} * b^2 c^6 + 2(b^2 - 4ac) * b^2 c^6 + 28 \sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}} * (a - b + c) * \sqrt{b^2 - 4ac} * a^2 c^7 - 8(b^2 - 4ac) * a^2 c^7 + 7 \sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}} * (a - b + c) * \sqrt{b^2 - 4ac} * b^2 c^7 + 6(b^2 - 4ac) * b^2 c^7 - 10 \sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}} * (a - b + c) * \sqrt{b^2 - 4ac} * c^8 - 4(b^2 - 4ac) * c^8 * \text{abs}(a - b + c) * (\text{pi} * \text{floor}(1/2 * x / \text{pi} + 1/2) + \arctan(2 * \sqrt{1/2}) * \tan(1/2 * x) / \sqrt{(2ac^3 - 2c^4 + \sqrt{-4(ac^3 + bc^3 + c^4)(ac^3 - bc^3 + c^4)} + 4(ac^3 - c^4)^2)) / (ac^3 - bc^3 + c^4)) / ((3a^5 b^2 c^4 - 5a^4 b^3 c^4 - 6a^3 b^4 c^4 + 10a^2 b^5 c^4 + 3a^2 b^6 c^4 - 5b^7 c^4 - 12a^6 c^5 + 20a^5 b c^5 + 47a^4 b^2 c^5 - 60a^3 b^3 c^5 - 46a^2 b^4 c^5 + 40a^2 b^5 c^5 + 11b^6 c^5 - 92a^5 c^6 + 80a^4 b c^6 + 182a^3 b^2 c^6 - 94a^2 b^3 c^6 - 78a^2 b^4 c^6 - 6b^5 c^6 - 184a^4 c^7 + 56a^3 b c^7 + 166a^2 b^2 c^7 + 36a^2 b^3 c^7 - 6b^4 c^7 - 120a^3 c^8 - 48a^2 b c^8 + 23a^2 b^2 c^8 + 11b^3 c^8 + 4a^2 c^9 - 44a^2 b c^9 - 5b^2 c^9 + 20a^2 c^{10}) * \text{abs}(c)) - ((2a^2 b^6 - 4a^2 b^7 + 2b^8 - 18a^3 b^4 c + 38a^2 b^5 c - 18a^2 b^6 c - 2b^7 c + 48a^4 b^2 c^2 - 112a^3 b^3 c^2 + 42a^2 b^4 c^2 + 28a^2 b^5 c^2 - 4b^6 c^2 - 32a^5 c^3 + 96a^4 b c^3 + 16a^3 b^2 c^3 - 128a^2 b^3 c^3 + 26a^2 b^4 c^3 + 6b^5 c^3 - 96a^4 c^4 + 192a^3 b c^4 - 16a^2 b^2 c^4 - 48a^2 b^3 c^4 - 2b^4 c^4 - 96a^3 c^5 + 96a^2 b c^5 + 16a^2 b^2 c^5 - 32a^2 c^6 + 3 \sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}} * (a - b + c) * \sqrt{b^2 - 4ac} * a^2 b^4 - 2(b^2 - 4ac) * a^2 b^4 - 2 \sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}} * (a - b + c) * \sqrt{b^2 - 4ac} * a^2 b^5 + 4(b^2 - 4ac) * a^2 b^5 - 5 \sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}} * (a - b + c) * \sqrt{b^2 - 4ac} * )
\end{aligned}$$



$$\begin{aligned}
& b^6 - 2*(b^2 - 4*a*c)*b^6 - 15*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}} \\
& c)*(a - b + c))*\sqrt{b^2 - 4*a*c}*a^3*b^2*c + 10*(b^2 - 4*a*c)*a^3*b^2*c + \\
& 13*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c))*\sqrt{b^2 - 4 \\
& *a*c}*a^2*b^3*c - 22*(b^2 - 4*a*c)*a^2*b^3*c + 37*\sqrt{a^2 - a*b + b*c - c^2 - \\
& \sqrt{b^2 - 4*a*c}}*(a - b + c))*\sqrt{b^2 - 4*a*c}*a*b^4*c + 10*(b^2 - 4* \\
& a*c)*a*b^4*c + \sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c))* \\
& \sqrt{b^2 - 4*a*c}*b^5*c + 2*(b^2 - 4*a*c)*b^5*c + 12*\sqrt{a^2 - a*b + b*c - \\
& c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c))*\sqrt{b^2 - 4*a*c}*a^4*c^2 - 8*(b^2 - \\
& 4*a*c)*a^4*c^2 - 20*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + \\
& c))*\sqrt{b^2 - 4*a*c}*a^3*b*c^2 + 24*(b^2 - 4*a*c)*a^3*b*c^2 - 85*\sqrt{a^2 \\
& - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c))*\sqrt{b^2 - 4*a*c}*a^2*b \\
& ^2*c^2 - 2*(b^2 - 4*a*c)*a^2*b^2*c^2 + 6*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{ \\
& b^2 - 4*a*c}}*(a - b + c))*\sqrt{b^2 - 4*a*c}*a*b^3*c^2 - 20*(b^2 - 4*a*c)*a \\
& b^3*c^2 + 6*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c))*\sqrt{ \\
& b^2 - 4*a*c}*b^4*c^2 + 4*(b^2 - 4*a*c)*b^4*c^2 + 68*\sqrt{a^2 - a*b + b*c \\
& - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c))*\sqrt{b^2 - 4*a*c}*a^3*c^3 - 24*(b^2 \\
& - 4*a*c)*a^3*c^3 - 40*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b \\
& + c))*\sqrt{b^2 - 4*a*c}*a^2*b*c^3 + 48*(b^2 - 4*a*c)*a^2*b*c^3 - 33*\sqrt{a \\
& ^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c))*\sqrt{b^2 - 4*a*c}*a*b \\
& ^2*c^3 - 10*(b^2 - 4*a*c)*a*b^2*c^3 - 11*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{ \\
& b^2 - 4*a*c}}*(a - b + c))*\sqrt{b^2 - 4*a*c}*b^3*c^3 - 6*(b^2 - 4*a*c)*b^3*c \\
& ^3 + 36*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c))*\sqrt{b^2 \\
& - 4*a*c}*a^2*c^4 - 24*(b^2 - 4*a*c)*a^2*c^4 + 44*\sqrt{a^2 - a*b + b*c - c \\
& ^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c))*\sqrt{b^2 - 4*a*c}*a*b*c^4 + 24*(b^2 - 4 \\
& *a*c)*a*b*c^4 + 5*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c \\
& ))*\sqrt{b^2 - 4*a*c}*b^2*c^4 + 2*(b^2 - 4*a*c)*b^2*c^4 - 20*\sqrt{a^2 - a*b \\
& + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c))*\sqrt{b^2 - 4*a*c}*a*c^5 - 8*(b \\
& ^2 - 4*a*c)*a*c^5)*c^2*abs(a - b + c) - (4*a^2*b^6*c - 4*b^8*c - 36*a^3*b^4 \\
& *c^2 - 4*a^2*b^5*c^2 + 44*a*b^6*c^2 + 4*b^7*c^2 + 96*a^4*b^2*c^3 + 32*a^3*b \\
& ^3*c^3 - 172*a^2*b^4*c^3 - 40*a*b^5*c^3 + 8*b^6*c^3 - 64*a^5*c^4 - 64*a^4*b \\
& *c^4 + 288*a^3*b^2*c^4 + 128*a^2*b^3*c^4 - 76*a*b^4*c^4 - 4*b^5*c^4 - 192*a \\
& ^4*c^5 - 128*a^3*b*c^5 + 224*a^2*b^2*c^5 + 32*a*b^3*c^5 - 4*b^4*c^5 - 192*a \\
& ^3*c^6 - 64*a^2*b*c^6 + 32*a*b^2*c^6 - 64*a^2*c^7 - 3*\sqrt{a^2 - a*b + b*c \\
& - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c))*a^3*b^4*c - \sqrt{a^2 - a*b + b*c - c \\
& ^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c))*a^2*b^5*c + 7*\sqrt{a^2 - a*b + b*c - c^2 \\
& - \sqrt{b^2 - 4*a*c}}*(a - b + c))*a*b^6*c + 5*\sqrt{a^2 - a*b + b*c - c^2 - \\
& \sqrt{b^2 - 4*a*c}}*(a - b + c))*b^7*c + 15*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{ \\
& b^2 - 4*a*c}}*(a - b + c))*a^4*b^2*c^2 + 8*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{ \\
& b^2 - 4*a*c}}*(a - b + c))*a^3*b^3*c^2 - 51*\sqrt{a^2 - a*b + b*c - c^2 - \\
& \sqrt{b^2 - 4*a*c}}*(a - b + c))*a^2*b^4*c^2 - 50*\sqrt{a^2 - a*b + b*c - c^2 \\
& - \sqrt{b^2 - 4*a*c}}*(a - b + c))*a*b^5*c^2 - 6*\sqrt{a^2 - a*b + b*c - c^2 - \\
& \sqrt{b^2 - 4*a*c}}*(a - b + c))*b^6*c^2 - 12*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{ \\
& b^2 - 4*a*c}}*(a - b + c))*a^5*c^3 - 16*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{ \\
& b^2 - 4*a*c}}*(a - b + c))*a^4*b*c^3 + 112*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{ \\
& b^2 - 4*a*c}}*(a - b + c))*a^3*b^2*c^3 + 156*\sqrt{a^2 - a*b + b*c - c^2 -
\end{aligned}$$

$$\begin{aligned}
& \sqrt{b^2 - 4ac}(a - b + c)a^2b^3c^3 + 27\sqrt{a^2 - ab + bc - c^2} \\
& - \sqrt{b^2 - 4ac}(a - b + c)a^2b^4c^3 - 5\sqrt{a^2 - ab + bc - c^2} \\
& - \sqrt{b^2 - 4ac}(a - b + c)b^5c^3 - 80\sqrt{a^2 - ab + bc - c^2} - \\
& \sqrt{b^2 - 4ac}(a - b + c)a^4c^4 - 144\sqrt{a^2 - ab + bc - c^2} - s \\
& \sqrt{b^2 - 4ac}(a - b + c)a^3b^4c^4 + 14\sqrt{a^2 - ab + bc - c^2} - s \\
& \sqrt{b^2 - 4ac}(a - b + c)a^2b^2c^4 + 48\sqrt{a^2 - ab + bc - c^2} - \\
& \sqrt{b^2 - 4ac}(a - b + c)a^2b^3c^4 + 7\sqrt{a^2 - ab + bc - c^2} - \\
& \sqrt{b^2 - 4ac}(a - b + c)b^4c^4 - 104\sqrt{a^2 - ab + bc - c^2} - s \\
& \sqrt{b^2 - 4ac}(a - b + c)a^3c^5 - 112\sqrt{a^2 - ab + bc - c^2} - sq \\
& \sqrt{b^2 - 4ac}(a - b + c)a^2b^2c^5 - 24\sqrt{a^2 - ab + bc - c^2} - sq \\
& \sqrt{b^2 - 4ac}(a - b + c)a^2b^3c^5 - 16\sqrt{a^2 - ab + bc - c^2} - sqrt( \\
& b^2 - 4ac)(a - b + c)a^2c^6 + 16\sqrt{a^2 - ab + bc - c^2} - sqrt(b^ \\
& 2 - 4ac)(a - b + c)a^2b^2c^6 + 20\sqrt{a^2 - ab + bc - c^2} - sqrt(b^2 - 4 \\
& ac)(a - b + c)a^2c^7 - 4(b^2 - 4ac)a^2b^4c + 4(b^2 - 4ac)b^6c \\
& + 20(b^2 - 4ac)a^3b^2c^2 + 4(b^2 - 4ac)a^2b^3c^2 - 28(b^2 - \\
& 4ac)a^2b^4c^2 - 4(b^2 - 4ac)b^5c^2 - 16(b^2 - 4ac)a^4c^3 - 16 \\
& (b^2 - 4ac)a^3b^2c^3 + 60(b^2 - 4ac)a^2b^2c^3 + 24(b^2 - 4ac)a \\
& *b^3c^3 - 8(b^2 - 4ac)b^4c^3 - 48(b^2 - 4ac)a^3c^4 - 32(b^2 - 4 \\
& ac)a^2b^2c^4 + 44(b^2 - 4ac)a^2b^2c^4 + 4(b^2 - 4ac)b^3c^4 - 48 \\
& *(b^2 - 4ac)a^2c^5 - 16(b^2 - 4ac)a^2b^2c^5 + 4(b^2 - 4ac)b^2c^5 \\
& - 16(b^2 - 4ac)a^2c^6)abs(a - b + c)abs(c) + (2a^3b^5c^2 - 4a^2b \\
& ^6c^2 + 2a^2b^7c^2 - 14a^4b^3c^3 + 30a^3b^4c^3 - 16a^2b^5c^3 + 2 \\
& *a^2b^6c^3 - 2b^7c^3 + 24a^5b^2c^4 - 60a^4b^2c^4 + 32a^3b^3c^4 - 6 \\
& *a^2b^4c^4 + 10a^2b^5c^4 + 2b^6c^4 + 16a^5c^5 - 16a^3b^2c^5 + 4a \\
& ^2b^3c^5 - 22a^2b^4c^5 + 4b^5c^5 + 32a^4c^6 - 48a^3b^2c^6 + 56a^2 \\
& b^2c^6 - 16a^2b^3c^6 - 2b^4c^6 + 16a^2b^2c^7 - 6b^3c^7 - 32a^2c^8 \\
& + 24a^2b^2c^8 + 4b^2c^8 - 16a^2c^9 + 3\sqrt{a^2 - ab + bc - c^2} - sqrt(b \\
& ^2 - 4ac)(a - b + c))\sqrt{b^2 - 4ac)a^3b^3c^2 - 2(b^2 - 4ac)a^ \\
& 3b^3c^2 - 2\sqrt{a^2 - ab + bc - c^2} - sqrt(b^2 - 4ac)(a - b + c))\sqrt{ \\
& b^2 - 4ac)a^2b^4c^2 + 4(b^2 - 4ac)a^2b^4c^2 - 5\sqrt{a^2 - a \\
& *b + bc - c^2} - sqrt(b^2 - 4ac)(a - b + c))\sqrt{b^2 - 4ac)a^2b^5c^2 \\
& - 2(b^2 - 4ac)a^2b^5c^2 - 9\sqrt{a^2 - ab + bc - c^2} - sqrt(b^2 - 4 \\
& ac)(a - b + c))\sqrt{b^2 - 4ac)a^4b^2c^3 + 6(b^2 - 4ac)a^4b^2c^3 + \\
& 9\sqrt{a^2 - ab + bc - c^2} - sqrt(b^2 - 4ac)(a - b + c))\sqrt{b^2 - 4 \\
& ac)a^3b^2c^3 - 14(b^2 - 4ac)a^3b^2c^3 + 24\sqrt{a^2 - ab + bc \\
& - c^2} - sqrt(b^2 - 4ac)(a - b + c))\sqrt{b^2 - 4ac)a^2b^3c^3 + 8(b \\
& ^2 - 4ac)a^2b^3c^3 + 3\sqrt{a^2 - ab + bc - c^2} - sqrt(b^2 - 4ac)a \\
& (a - b + c))\sqrt{b^2 - 4ac)a^2b^4c^3 - 2(b^2 - 4ac)a^2b^4c^3 + 5\sqrt{ \\
& a^2 - ab + bc - c^2} - sqrt(b^2 - 4ac)(a - b + c))\sqrt{b^2 - 4ac) \\
& *b^5c^3 + 2(b^2 - 4ac)b^5c^3 - 6\sqrt{a^2 - ab + bc - c^2} - sqrt(b^ \\
& 2 - 4ac)(a - b + c))\sqrt{b^2 - 4ac)a^4c^4 + 4(b^2 - 4ac)a^4c^4 \\
& - 32\sqrt{a^2 - ab + bc - c^2} - sqrt(b^2 - 4ac)(a - b + c))\sqrt{b^2 \\
& - 4ac)a^3b^2c^4 - sqrt{a^2 - ab + bc - c^2} - sqrt{b^2 - 4ac)(a - b
\end{aligned}$$

```

+ c))*sqrt(b^2 - 4*a*c)*a^2*b^2*c^4 - 2*(b^2 - 4*a*c)*a^2*b^2*c^4 - 21*sqrt
(a^2 - a*b + b*c - c^2 - sqrt(b^2 - 4*a*c))*(a - b + c))*sqrt(b^2 - 4*a*c)*a
*b^3*c^4 - 2*(b^2 - 4*a*c)*a*b^3*c^4 - sqrt(a^2 - a*b + b*c - c^2 - sqrt(b^
2 - 4*a*c))*(a - b + c))*sqrt(b^2 - 4*a*c)*b^4*c^4 - 2*(b^2 - 4*a*c)*b^4*c^4
- 28*sqrt(a^2 - a*b + b*c - c^2 - sqrt(b^2 - 4*a*c))*(a - b + c))*sqrt(b^2
- 4*a*c)*a^3*c^5 + 8*(b^2 - 4*a*c)*a^3*c^5 + 34*sqrt(a^2 - a*b + b*c - c^2
- sqrt(b^2 - 4*a*c))*(a - b + c))*sqrt(b^2 - 4*a*c)*a^2*b*c^5 - 12*(b^2 - 4*
a*c)*a^2*b*c^5 - 9*sqrt(a^2 - a*b + b*c - c^2 - sqrt(b^2 - 4*a*c))*(a - b +
c))*sqrt(b^2 - 4*a*c)*a*b^2*c^5 + 14*(b^2 - 4*a*c)*a*b^2*c^5 - 6*sqrt(a^2 -
a*b + b*c - c^2 - sqrt(b^2 - 4*a*c))*(a - b + c))*sqrt(b^2 - 4*a*c)*b^3*c^5
- 4*(b^2 - 4*a*c)*b^3*c^5 + 16*sqrt(a^2 - a*b + b*c - c^2 - sqrt(b^2 - 4*a
*c))*(a - b + c))*sqrt(b^2 - 4*a*c)*a^2*c^6 + sqrt(a^2 - a*b + b*c - c^2 - s
qrt(b^2 - 4*a*c))*(a - b + c))*sqrt(b^2 - 4*a*c)*b^2*c^6 + 2*(b^2 - 4*a*c)*b
^2*c^6 + 28*sqrt(a^2 - a*b + b*c - c^2 - sqrt(b^2 - 4*a*c))*(a - b + c))*sqr
t(b^2 - 4*a*c)*a*c^7 - 8*(b^2 - 4*a*c)*a*c^7 + 7*sqrt(a^2 - a*b + b*c - c^2
- sqrt(b^2 - 4*a*c))*(a - b + c))*sqrt(b^2 - 4*a*c)*b*c^7 + 6*(b^2 - 4*a*c)
*b*c^7 - 10*sqrt(a^2 - a*b + b*c - c^2 - sqrt(b^2 - 4*a*c))*(a - b + c))*sqr
t(b^2 - 4*a*c)*c^8 - 4*(b^2 - 4*a*c)*c^8)*abs(a - b + c))*(pi*floor(1/2*x/p
i + 1/2) + arctan(2*sqrt(1/2)*tan(1/2*x)/sqrt((2*a*c^3 - 2*c^4 - sqrt(-4*(a
*c^3 + b*c^3 + c^4)*(a*c^3 - b*c^3 + c^4) + 4*(a*c^3 - c^4)^2)))/(a*c^3 - b*
c^3 + c^4))))/(3*a^5*b^2*c^4 - 5*a^4*b^3*c^4 - 6*a^3*b^4*c^4 + 10*a^2*b^5*
c^4 + 3*a*b^6*c^4 - 5*b^7*c^4 - 12*a^6*c^5 + 20*a^5*b*c^5 + 47*a^4*b^2*c^5
- 60*a^3*b^3*c^5 - 46*a^2*b^4*c^5 + 40*a*b^5*c^5 + 11*b^6*c^5 - 92*a^5*c^6
+ 80*a^4*b*c^6 + 182*a^3*b^2*c^6 - 94*a^2*b^3*c^6 - 78*a*b^4*c^6 - 6*b^5*c^
6 - 184*a^4*c^7 + 56*a^3*b*c^7 + 166*a^2*b^2*c^7 + 36*a*b^3*c^7 - 6*b^4*c^7
- 120*a^3*c^8 - 48*a^2*b*c^8 + 23*a*b^2*c^8 + 11*b^3*c^8 + 4*a^2*c^9 - 44*
a*b*c^9 - 5*b^2*c^9 + 20*a*c^10)*abs(c)) + 1/2*(2*b^2 - 2*a*c - 3*c^2)*x/c^
3 - (2*b*tan(1/2*x)^3 + c*tan(1/2*x)^3 + 2*b*tan(1/2*x) - c*tan(1/2*x))/(t
an(1/2*x)^2 + 1)^2*c^2)

```

## Mupad [B] (verification not implemented)

Time = 15.41 (sec) , antiderivative size = 46613, normalized size of antiderivative = 120.14

$$\int \frac{\sin^4(x)}{a + b \cos(x) + c \cos^2(x)} dx = \text{Too large to display}$$

[In] int(sin(x)^4/(a + b\*cos(x) + c\*cos(x)^2),x)

[Out] atan(((((((2048\*(48\*a\*c^15 + 272\*a^2\*c^14 + 576\*a^3\*c^13 + 576\*a^4\*c^12 + 2  
72\*a^5\*c^11 + 48\*a^6\*c^10 - 12\*b^2\*c^14 + 20\*b^3\*c^13 + 18\*b^4\*c^12 - 46\*b^  
5\*c^11 + 6\*b^6\*c^10 + 26\*b^7\*c^9 - 12\*b^8\*c^8 - 140\*a\*b^2\*c^13 + 288\*a\*b^3\*  
c^12 + 30\*a\*b^4\*c^11 - 240\*a\*b^5\*c^10 + 74\*a\*b^6\*c^9 + 20\*a\*b^7\*c^8 - 416\*a  
^2\*b\*c^13 - 736\*a^3\*b\*c^12 - 544\*a^4\*b\*c^11 - 144\*a^5\*b\*c^10 - 360\*a^2\*b^2\*  
c^12 + 728\*a^2\*b^3\*c^11 - 50\*a^2\*b^4\*c^10 - 182\*a^2\*b^5\*c^9 + 4\*a^2\*b^6\*c^8

$$\begin{aligned}
& - 360*a^3*b^2*c^{11} + 544*a^3*b^3*c^{10} + 10*a^3*b^4*c^9 - 20*a^3*b^5*c^8 - \\
& 172*a^4*b^2*c^{10} + 116*a^4*b^3*c^9 + 8*a^4*b^4*c^8 - 44*a^5*b^2*c^9 - 80*a* \\
& b*c^{14})/c^8 - (2048*\tan(x/2)*(-(8*a*c^7 + b^8 + 24*a^2*c^6 + 24*a^3*c^5 + \\
& 8*a^4*c^4 + b^5*(-(4*a*c - b^2)^3)^{(1/2)} - 2*b^2*c^6 + 3*b^4*c^4 - 3*b^6*c^2 \\
& - 18*a*b^2*c^5 + 24*a*b^4*c^3 + 3*b*c^4*(-(4*a*c - b^2)^3)^{(1/2)} - 54*a^2 \\
& *b^2*c^4 + 33*a^2*b^4*c^2 - 38*a^3*b^2*c^3 - 3*b^3*c^2*(-(4*a*c - b^2)^3)^{(1/2)} \\
& - 10*a*b^6*c + 3*a^2*b*c^2*(-(4*a*c - b^2)^3)^{(1/2)} + 6*a*b*c^3*(-(4*a \\
& *c - b^2)^3)^{(1/2)} - 4*a*b^3*c*(-(4*a*c - b^2)^3)^{(1/2)})/(2*(16*a^2*c^8 + b \\
& ^4*c^6 - 8*a*b^2*c^7)))^{(1/2)}*(32*a*c^{16} - 64*a^2*c^{15} - 128*a^3*c^{14} + 64* \\
& a^4*c^{13} + 96*a^5*c^{12} - 8*b^2*c^{15} + 24*b^3*c^{14} - 32*b^4*c^{13} + 32*b^5*c^{12} \\
& - 24*b^6*c^{11} + 8*b^7*c^{10} + 144*a*b^2*c^{14} - 200*a*b^3*c^{13} + 184*a*b^4 \\
& *c^{12} - 56*a*b^5*c^{11} - 8*a*b^6*c^{10} + 288*a^2*b*c^{14} + 352*a^3*b*c^{13} - 32 \\
& *a^4*b*c^{12} - 320*a^2*b^2*c^{13} + 8*a^2*b^3*c^{12} + 96*a^2*b^4*c^{11} - 8*a^2*b \\
& ^5*c^{10} - 272*a^3*b^2*c^{12} + 40*a^3*b^3*c^{11} + 8*a^3*b^4*c^{10} - 56*a^4*b^2* \\
& c^{11} - 96*a*b*c^{15}))/c^8)*(-(8*a*c^7 + b^8 + 24*a^2*c^6 + 24*a^3*c^5 + 8*a^ \\
& 4*c^4 + b^5*(-(4*a*c - b^2)^3)^{(1/2)} - 2*b^2*c^6 + 3*b^4*c^4 - 3*b^6*c^2 - \\
& 18*a*b^2*c^5 + 24*a*b^4*c^3 + 3*b*c^4*(-(4*a*c - b^2)^3)^{(1/2)} - 54*a^2*b^2 \\
& *c^4 + 33*a^2*b^4*c^2 - 38*a^3*b^2*c^3 - 3*b^3*c^2*(-(4*a*c - b^2)^3)^{(1/2)} \\
& - 10*a*b^6*c + 3*a^2*b*c^2*(-(4*a*c - b^2)^3)^{(1/2)} + 6*a*b*c^3*(-(4*a*c - \\
& b^2)^3)^{(1/2)} - 4*a*b^3*c*(-(4*a*c - b^2)^3)^{(1/2)})/(2*(16*a^2*c^8 + b^4*c \\
& ^6 - 8*a*b^2*c^7)))^{(1/2)} + (2048*\tan(x/2)*(24*b*c^{14} - 96*a*c^{14} - 8*c^{15} \\
& + 152*a^2*c^{13} + 952*a^3*c^{12} + 1096*a^4*c^{11} + 304*a^5*c^{10} - 152*a^6*c^9 \\
& - 72*a^7*c^8 + 2*b^2*c^{13} - 38*b^3*c^{12} - 7*b^4*c^{11} + 39*b^5*c^{10} - 15*b^6 \\
& *c^9 + 35*b^7*c^8 - 44*b^8*c^7 - 4*b^9*c^6 + 24*b^{10}*c^5 - 8*b^{11}*c^4 + 68* \\
& a*b^2*c^{12} + 42*a*b^3*c^{11} - 159*a*b^4*c^{10} - 400*a*b^5*c^9 + 537*a*b^6*c^8 \\
& + 68*a*b^7*c^7 - 276*a*b^8*c^6 + 72*a*b^9*c^5 + 8*a*b^{10}*c^4 - 944*a^2*b*c \\
& ^{12} - 2520*a^3*b*c^{11} - 1824*a^4*b*c^{10} - 272*a^5*b*c^9 + 88*a^6*b*c^8 + 58 \\
& 4*a^2*b^2*c^{11} + 1742*a^2*b^3*c^{10} - 1645*a^2*b^4*c^9 - 795*a^2*b^5*c^8 + 1 \\
& 132*a^2*b^6*c^7 - 112*a^2*b^7*c^6 - 112*a^2*b^8*c^5 + 8*a^2*b^9*c^4 + 476*a \\
& ^3*b^2*c^{10} + 2766*a^3*b^3*c^9 - 1705*a^3*b^4*c^8 - 396*a^3*b^5*c^7 + 456*a \\
& ^3*b^6*c^6 - 56*a^3*b^7*c^5 - 8*a^3*b^8*c^4 + 230*a^4*b^2*c^9 + 880*a^4*b^3 \\
& *c^8 - 656*a^4*b^4*c^7 + 140*a^4*b^5*c^6 + 72*a^4*b^6*c^5 + 464*a^5*b^2*c^8 \\
& - 192*a^5*b^3*c^7 - 220*a^5*b^4*c^6 + 256*a^6*b^2*c^7 + 136*a*b*c^{13}))/c^8 \\
& )*(-(8*a*c^7 + b^8 + 24*a^2*c^6 + 24*a^3*c^5 + 8*a^4*c^4 + b^5*(-(4*a*c - b \\
& ^2)^3)^{(1/2)} - 2*b^2*c^6 + 3*b^4*c^4 - 3*b^6*c^2 - 18*a*b^2*c^5 + 24*a*b^4* \\
& c^3 + 3*b*c^4*(-(4*a*c - b^2)^3)^{(1/2)} - 54*a^2*b^2*c^4 + 33*a^2*b^4*c^2 - \\
& 38*a^3*b^2*c^3 - 3*b^3*c^2*(-(4*a*c - b^2)^3)^{(1/2)} - 10*a*b^6*c + 3*a^2*b* \\
& c^2*(-(4*a*c - b^2)^3)^{(1/2)} + 6*a*b*c^3*(-(4*a*c - b^2)^3)^{(1/2)} - 4*a*b^3 \\
& *c*(-(4*a*c - b^2)^3)^{(1/2)})/(2*(16*a^2*c^8 + b^4*c^6 - 8*a*b^2*c^7)))^{(1/2)} \\
& ) + (2048*(236*a*c^{13} - 32*b*c^{13} + 12*c^{14} + 1084*a^2*c^{12} + 2328*a^3*c^{11} \\
& + 2784*a^4*c^{10} + 1948*a^5*c^9 + 780*a^6*c^8 + 160*a^7*c^7 + 12*a^8*c^6 - \\
& 39*b^2*c^{12} + 121*b^3*c^{11} + 61*b^4*c^{10} - 220*b^5*c^9 - 36*b^6*c^8 + 232*b \\
& ^7*c^7 - 28*b^8*c^6 - 127*b^9*c^5 + 42*b^{10}*c^4 + 26*b^{11}*c^3 - 12*b^{12}*c^2 \\
& - 635*a*b^2*c^{11} + 1300*a*b^3*c^{10} + 608*a*b^4*c^9 - 1792*a*b^5*c^8 - 60*a \\
& *b^6*c^7 + 1218*a*b^7*c^6 - 249*a*b^8*c^5 - 340*a*b^9*c^4 + 98*a*b^{10}*c^3 +
\end{aligned}$$

$$\begin{aligned}
& 20*a*b^{11}*c^2 - 1616*a^2*b*c^{11} - 3160*a^3*b*c^{10} - 3440*a^4*b*c^9 - 2132* \\
& a^5*b*c^8 - 704*a^6*b*c^7 - 96*a^7*b*c^6 - 2242*a^2*b^2*c^{10} + 4146*a^2*b^3 \\
& *c^9 + 1420*a^2*b^4*c^8 - 4158*a^2*b^5*c^7 + 77*a^2*b^6*c^6 + 1735*a^2*b^7* \\
& c^5 - 234*a^2*b^8*c^4 - 222*a^2*b^9*c^3 + 4*a^2*b^{10}*c^2 - 3714*a^3*b^2*c^9 \\
& + 6252*a^3*b^3*c^8 + 1730*a^3*b^4*c^7 - 4300*a^3*b^5*c^6 - 79*a^3*b^6*c^5 \\
& + 968*a^3*b^7*c^4 + 2*a^3*b^8*c^3 - 20*a^3*b^9*c^2 - 3523*a^4*b^2*c^8 + 502 \\
& 5*a^4*b^3*c^7 + 1339*a^4*b^4*c^6 - 2082*a^4*b^5*c^5 - 192*a^4*b^6*c^4 + 156 \\
& *a^4*b^7*c^3 + 8*a^4*b^8*c^2 - 2031*a^5*b^2*c^7 + 2104*a^5*b^3*c^6 + 634*a^ \\
& 5*b^4*c^5 - 388*a^5*b^5*c^4 - 60*a^5*b^6*c^3 - 676*a^6*b^2*c^6 + 364*a^6*b^ \\
& 3*c^5 + 136*a^6*b^4*c^4 - 100*a^7*b^2*c^5 - 404*a*b*c^{12})/c^8)*(-(8*a*c^7 \\
& + b^8 + 24*a^2*c^6 + 24*a^3*c^5 + 8*a^4*c^4 + b^5*(-(4*a*c - b^2)^3)^{(1/2)} \\
& - 2*b^2*c^6 + 3*b^4*c^4 - 3*b^6*c^2 - 18*a*b^2*c^5 + 24*a*b^4*c^3 + 3*b*c^4 \\
& *(-(4*a*c - b^2)^3)^{(1/2)} - 54*a^2*b^2*c^4 + 33*a^2*b^4*c^2 - 38*a^3*b^2*c^ \\
& 3 - 3*b^3*c^2*(-(4*a*c - b^2)^3)^{(1/2)} - 10*a*b^6*c + 3*a^2*b*c^2*(-(4*a*c \\
& - b^2)^3)^{(1/2)} + 6*a*b*c^3*(-(4*a*c - b^2)^3)^{(1/2)} - 4*a*b^3*c*(-(4*a*c - \\
& b^2)^3)^{(1/2)})/(2*(16*a^2*c^8 + b^4*c^6 - 8*a*b^2*c^7)))^{(1/2)} - (2048*\tan \\
& (x/2)*(20*a*b^{12} + 42*a*c^{12} - 58*b*c^{12} + 4*b^{12}*c - 4*b^{13} + 22*c^{13} - 40 \\
& *a^2*b^{11} + 40*a^3*b^{10} - 20*a^4*b^9 + 4*a^5*b^8 - 214*a^2*c^{11} - 938*a^3*c \\
& ^{10} - 1538*a^4*c^9 - 1278*a^5*c^8 - 498*a^6*c^7 - 14*a^7*c^6 + 52*a^8*c^5 + \\
& 12*a^9*c^4 + 14*b^2*c^{11} + 34*b^3*c^{10} + 59*b^4*c^9 - 39*b^5*c^8 - 160*b^6 \\
& *c^7 + 112*b^7*c^6 + 105*b^8*c^5 - 89*b^9*c^4 - 28*b^{10}*c^3 + 28*b^{11}*c^2 - \\
& 518*a*b^2*c^{10} - 264*a*b^3*c^9 + 1339*a*b^4*c^8 - 92*a*b^5*c^7 - 1312*a*b^ \\
& 6*c^6 + 268*a*b^7*c^5 + 649*a*b^8*c^4 - 124*a*b^9*c^3 - 180*a*b^{10}*c^2 + 15 \\
& 50*a^2*b*c^{10} - 160*a^2*b^{10}*c + 3488*a^3*b*c^9 + 320*a^3*b^9*c + 3350*a^4* \\
& b*c^8 - 300*a^4*b^8*c + 1092*a^5*b*c^7 + 136*a^5*b^7*c - 462*a^6*b*c^6 - 24 \\
& *a^6*b^6*c - 440*a^7*b*c^5 - 92*a^8*b*c^4 - 1568*a^2*b^2*c^9 - 2708*a^2*b^3 \\
& *c^8 + 3564*a^2*b^4*c^7 + 1964*a^2*b^5*c^6 - 2790*a^2*b^6*c^5 - 922*a^2*b^7 \\
& *c^4 + 1048*a^2*b^8*c^3 + 276*a^2*b^9*c^2 - 652*a^3*b^2*c^8 - 6280*a^3*b^3* \\
& c^7 + 2020*a^3*b^4*c^6 + 4988*a^3*b^5*c^5 - 1118*a^3*b^6*c^4 - 2008*a^3*b^7 \\
& *c^3 + 140*a^3*b^8*c^2 + 2350*a^4*b^2*c^7 - 5630*a^4*b^3*c^6 - 2295*a^4*b^4 \\
& *c^5 + 3563*a^4*b^5*c^4 + 1260*a^4*b^6*c^3 - 740*a^4*b^7*c^2 + 3314*a^5*b^2 \\
& *c^6 - 1456*a^5*b^3*c^5 - 2771*a^5*b^4*c^4 + 308*a^5*b^5*c^3 + 732*a^5*b^6* \\
& c^2 + 1572*a^6*b^2*c^5 + 576*a^6*b^3*c^4 - 696*a^6*b^4*c^3 - 300*a^6*b^5*c^ \\
& 2 + 192*a^7*b^2*c^4 + 272*a^7*b^3*c^3 + 44*a^7*b^4*c^2 - 32*a^8*b^2*c^3 + 1 \\
& 48*a*b*c^{11} + 24*a*b^{11}*c))/c^8)*(-(8*a*c^7 + b^8 + 24*a^2*c^6 + 24*a^3*c^5 \\
& + 8*a^4*c^4 + b^5*(-(4*a*c - b^2)^3)^{(1/2)} - 2*b^2*c^6 + 3*b^4*c^4 - 3*b^6 \\
& *c^2 - 18*a*b^2*c^5 + 24*a*b^4*c^3 + 3*b*c^4*(-(4*a*c - b^2)^3)^{(1/2)} - 54* \\
& a^2*b^2*c^4 + 33*a^2*b^4*c^2 - 38*a^3*b^2*c^3 - 3*b^3*c^2*(-(4*a*c - b^2)^3 \\
& )^{(1/2)} - 10*a*b^6*c + 3*a^2*b*c^2*(-(4*a*c - b^2)^3)^{(1/2)} + 6*a*b*c^3*(-( \\
& 4*a*c - b^2)^3)^{(1/2)} - 4*a*b^3*c*(-(4*a*c - b^2)^3)^{(1/2)})/(2*(16*a^2*c^8 \\
& + b^4*c^6 - 8*a*b^2*c^7)))^{(1/2)}*i - (((((2048*(48*a*c^{15} + 272*a^2*c^{14} + \\
& 576*a^3*c^{13} + 576*a^4*c^{12} + 272*a^5*c^{11} + 48*a^6*c^{10} - 12*b^2*c^{14} + 2 \\
& 0*b^3*c^{13} + 18*b^4*c^{12} - 46*b^5*c^{11} + 6*b^6*c^{10} + 26*b^7*c^9 - 12*b^8*c \\
& ^8 - 140*a*b^2*c^{13} + 288*a*b^3*c^{12} + 30*a*b^4*c^{11} - 240*a*b^5*c^{10} + 74* \\
& a*b^6*c^9 + 20*a*b^7*c^8 - 416*a^2*b*c^{13} - 736*a^3*b*c^{12} - 544*a^4*b*c^{11}
\end{aligned}$$

$$\begin{aligned}
& - 144a^5b^2c^{10} - 360a^2b^2c^{12} + 728a^2b^3c^{11} - 50a^2b^4c^{10} - \\
& 182a^2b^5c^9 + 4a^2b^6c^8 - 360a^3b^2c^{11} + 544a^3b^3c^{10} + 10 \\
& a^3b^4c^9 - 20a^3b^5c^8 - 172a^4b^2c^{10} + 116a^4b^3c^9 + 8a^4b^4 \\
& b^4c^8 - 44a^5b^2c^9 - 80a^5b^3c^8 - 14a^5b^4c^7 - 14a^5b^5c^6 - 14a^5b^6c^5 \\
& - 14a^5b^7c^4 - 14a^5b^8c^3 - 14a^5b^9c^2 - 14a^5b^{10}c - 14a^5b^{11} \\
& - 14a^5b^{12})/c^8 + (2048 \tan(x/2) * (-8a^7c^7 + b^8 + 24a^2c^6 + 24a^3c^5 + 8a^4c^4 + b^5 * (-4ac - b^2)^3)^{1/2} - \\
& 2b^2c^6 + 3b^4c^4 - 3b^6c^2 - 18ab^2c^5 + 24ab^4c^3 + 3b^3c^4 * (-4ac - b^2)^3)^{1/2} - 54a^2b^2c^4 + 33a^2b^4c^2 - 38a^3b^2c^3 \\
& - 3b^3c^2 * (-4ac - b^2)^3)^{1/2} - 10ab^6c + 3a^2b^2c^2 * (-4ac - b^2)^3)^{1/2} + 6ab^3c^3 * (-4ac - b^2)^3)^{1/2} - 4ab^3c * (-4ac - b^2)^3)^{1/2} \\
& ) / (2 * (16a^2c^8 + b^4c^6 - 8ab^2c^7))^{1/2} * (32a^16c^{16} - 64a^2c^{15} - 128a^3c^{14} + 64a^4c^{13} + 96a^5c^{12} - 8b^2c^{15} + 24b^3 \\
& 3c^{14} - 32b^4c^{13} + 32b^5c^{12} - 24b^6c^{11} + 8b^7c^{10} + 144ab^2c^{14} - 200ab^3c^{13} + 184ab^4c^{12} - 56ab^5c^{11} - 8ab^6c^{10} + 288a^2 \\
& a^2b^2c^{14} + 352a^3b^2c^{13} - 32a^4b^2c^{12} - 320a^2b^2c^{13} + 8a^2b^3c^{12} + 96a^2b^4c^{11} - 8a^2b^5c^{10} - 272a^3b^2c^{12} + 40a^3b^3c^{11} \\
& 1 + 8a^3b^4c^{10} - 56a^4b^2c^{11} - 96ab^5c^{15})/c^8 * (-8a^7c^7 + b^8 + 24a^2c^6 + 24a^3c^5 + 8a^4c^4 + b^5 * (-4ac - b^2)^3)^{1/2} - 2b^2 \\
& 2c^6 + 3b^4c^4 - 3b^6c^2 - 18ab^2c^5 + 24ab^4c^3 + 3b^3c^4 * (-4ac - b^2)^3)^{1/2} - 54a^2b^2c^4 + 33a^2b^4c^2 - 38a^3b^2c^3 - 3b^3 \\
& b^3c^2 * (-4ac - b^2)^3)^{1/2} - 10ab^6c + 3a^2b^2c^2 * (-4ac - b^2)^3)^{1/2} + 6ab^3c^3 * (-4ac - b^2)^3)^{1/2} - 4ab^3c * (-4ac - b^2)^3)^{1/2} \\
& 3)^{1/2} ) / (2 * (16a^2c^8 + b^4c^6 - 8ab^2c^7))^{1/2} - (2048 \tan(x/2) * (24b^14c^{14} - 96a^14c^{14} - 8c^{15} + 152a^2c^{13} + 952a^3c^{12} + 1096a^4c^{11} \\
& 11 + 304a^5c^{10} - 152a^6c^9 - 72a^7c^8 + 2b^2c^{13} - 38b^3c^{12} - 7b^4c^{11} + 39b^5c^{10} - 15b^6c^9 + 35b^7c^8 - 44b^8c^7 - 4b^9c^6 \\
& + 24b^{10}c^5 - 8b^{11}c^4 + 68ab^2c^{12} + 42ab^3c^{11} - 159ab^4c^{10} - 400ab^5c^9 + 537ab^6c^8 + 68ab^7c^7 - 276ab^8c^6 + 72ab^9c^5 + 8ab^{10}c^4 - 944a^2 \\
& a^2b^2c^{12} - 2520a^3b^2c^{11} - 1824a^4b^2c^{10} - 272a^5b^2c^9 + 88a^6b^2c^8 + 584a^2b^2c^{11} + 1742a^2b^3c^{10} - 1645a^2b^4c^9 - 795a^2b^5c^8 + 1132a^2b^6c^7 - 112a^2b^7c^6 - 112a^2 \\
& b^8c^5 + 8a^2b^9c^4 + 476a^3b^2c^{10} + 2766a^3b^3c^9 - 1705a^3b^4c^8 - 396a^3b^5c^7 + 456a^3b^6c^6 - 56a^3b^7c^5 - 8a^3b^8c^4 + 230a^4b^2c^9 + 880a^4b^3c^8 - 656a^4b^4c^7 + 140a^4b^5c^6 + \\
& 72a^4b^6c^5 + 464a^5b^2c^8 - 192a^5b^3c^7 - 220a^5b^4c^6 + 256a^6b^2c^7 + 136ab^2c^{13})/c^8 * (-8a^7c^7 + b^8 + 24a^2c^6 + 24a^3c^5 + 8a^4c^4 + b^5 * (-4ac - b^2)^3)^{1/2} - 2b^2 \\
& 2c^6 + 3b^4c^4 - 3b^6c^2 - 18ab^2c^5 + 24ab^4c^3 + 3b^3c^4 * (-4ac - b^2)^3)^{1/2} - 54a^2b^2c^4 + 33a^2b^4c^2 - 38a^3b^2c^3 - 3b^3c^2 * (-4ac - b^2)^3)^{1/2} - 10ab^6c + 3a^2b^2c^2 * (-4ac - b^2)^3)^{1/2} + 6ab^3c^3 * (- \\
& (4ac - b^2)^3)^{1/2} - 4ab^3c * (-4ac - b^2)^3)^{1/2} ) / (2 * (16a^2c^8 + b^4c^6 - 8ab^2c^7))^{1/2} + (2048 * (236a^13c^{13} - 32b^13c^{13} + 12c^{14} \\
& + 1084a^2c^{12} + 2328a^3c^{11} + 2784a^4c^{10} + 1948a^5c^9 + 780a^6c^8 + 160a^7c^7 + 12a^8c^6 - 39b^2c^{12} + 121b^3c^{11} + 61b^4c^{10} - 220b^5c^9 - 36b^6c^8 + 232b^7c^7 - 28b^8c^6 - 127b^9c^5 + 42b^{10} \\
& c^4 + 26b^{11}c^3 - 12b^{12}c^2 - 635ab^2c^{11} + 1300ab^3c^{10} + 608a
\end{aligned}$$

$$\begin{aligned}
& *b^4*c^9 - 1792*a*b^5*c^8 - 60*a*b^6*c^7 + 1218*a*b^7*c^6 - 249*a*b^8*c^5 - \\
& 340*a*b^9*c^4 + 98*a*b^{10}*c^3 + 20*a*b^{11}*c^2 - 1616*a^2*b*c^{11} - 3160*a^3 \\
& *b*c^{10} - 3440*a^4*b*c^9 - 2132*a^5*b*c^8 - 704*a^6*b*c^7 - 96*a^7*b*c^6 - \\
& 2242*a^2*b^2*c^{10} + 4146*a^2*b^3*c^9 + 1420*a^2*b^4*c^8 - 4158*a^2*b^5*c^7 \\
& + 77*a^2*b^6*c^6 + 1735*a^2*b^7*c^5 - 234*a^2*b^8*c^4 - 222*a^2*b^9*c^3 + 4 \\
& *a^2*b^{10}*c^2 - 3714*a^3*b^2*c^9 + 6252*a^3*b^3*c^8 + 1730*a^3*b^4*c^7 - 43 \\
& 00*a^3*b^5*c^6 - 79*a^3*b^6*c^5 + 968*a^3*b^7*c^4 + 2*a^3*b^8*c^3 - 20*a^3* \\
& b^9*c^2 - 3523*a^4*b^2*c^8 + 5025*a^4*b^3*c^7 + 1339*a^4*b^4*c^6 - 2082*a^4 \\
& *b^5*c^5 - 192*a^4*b^6*c^4 + 156*a^4*b^7*c^3 + 8*a^4*b^8*c^2 - 2031*a^5*b^2 \\
& *c^7 + 2104*a^5*b^3*c^6 + 634*a^5*b^4*c^5 - 388*a^5*b^5*c^4 - 60*a^5*b^6*c^ \\
& 3 - 676*a^6*b^2*c^6 + 364*a^6*b^3*c^5 + 136*a^6*b^4*c^4 - 100*a^7*b^2*c^5 - \\
& 404*a*b*c^{12}))/c^8)*(-(8*a*c^7 + b^8 + 24*a^2*c^6 + 24*a^3*c^5 + 8*a^4*c^4 \\
& + b^5*(-(4*a*c - b^2)^3)^{(1/2)} - 2*b^2*c^6 + 3*b^4*c^4 - 3*b^6*c^2 - 18*a* \\
& b^2*c^5 + 24*a*b^4*c^3 + 3*b*c^4*(-(4*a*c - b^2)^3)^{(1/2)} - 54*a^2*b^2*c^4 \\
& + 33*a^2*b^4*c^2 - 38*a^3*b^2*c^3 - 3*b^3*c^2*(-(4*a*c - b^2)^3)^{(1/2)} - 10 \\
& *a*b^6*c + 3*a^2*b*c^2*(-(4*a*c - b^2)^3)^{(1/2)} + 6*a*b*c^3*(-(4*a*c - b^2) \\
& ^3)^{(1/2)} - 4*a*b^3*c*(-(4*a*c - b^2)^3)^{(1/2)})/(2*(16*a^2*c^8 + b^4*c^6 - \\
& 8*a*b^2*c^7)))^{(1/2)} + (2048*\tan(x/2)*(20*a*b^{12} + 42*a*c^{12} - 58*b*c^{12} + \\
& 4*b^{12}*c - 4*b^{13} + 22*c^{13} - 40*a^2*b^{11} + 40*a^3*b^{10} - 20*a^4*b^9 + 4*a^ \\
& 5*b^8 - 214*a^2*c^{11} - 938*a^3*c^{10} - 1538*a^4*c^9 - 1278*a^5*c^8 - 498*a^6 \\
& *c^7 - 14*a^7*c^6 + 52*a^8*c^5 + 12*a^9*c^4 + 14*b^2*c^{11} + 34*b^3*c^{10} + 5 \\
& 9*b^4*c^9 - 39*b^5*c^8 - 160*b^6*c^7 + 112*b^7*c^6 + 105*b^8*c^5 - 89*b^9*c \\
& ^4 - 28*b^{10}*c^3 + 28*b^{11}*c^2 - 518*a*b^2*c^{10} - 264*a*b^3*c^9 + 1339*a*b^ \\
& 4*c^8 - 92*a*b^5*c^7 - 1312*a*b^6*c^6 + 268*a*b^7*c^5 + 649*a*b^8*c^4 - 124 \\
& *a*b^9*c^3 - 180*a*b^{10}*c^2 + 1550*a^2*b*c^{10} - 160*a^2*b^{10}*c + 3488*a^3*b \\
& *c^9 + 320*a^3*b^9*c + 3350*a^4*b*c^8 - 300*a^4*b^8*c + 1092*a^5*b*c^7 + 13 \\
& 6*a^5*b^7*c - 462*a^6*b*c^6 - 24*a^6*b^6*c - 440*a^7*b*c^5 - 92*a^8*b*c^4 - \\
& 1568*a^2*b^2*c^9 - 2708*a^2*b^3*c^8 + 3564*a^2*b^4*c^7 + 1964*a^2*b^5*c^6 \\
& - 2790*a^2*b^6*c^5 - 922*a^2*b^7*c^4 + 1048*a^2*b^8*c^3 + 276*a^2*b^9*c^2 - \\
& 652*a^3*b^2*c^8 - 6280*a^3*b^3*c^7 + 2020*a^3*b^4*c^6 + 4988*a^3*b^5*c^5 - \\
& 1118*a^3*b^6*c^4 - 2008*a^3*b^7*c^3 + 140*a^3*b^8*c^2 + 2350*a^4*b^2*c^7 - \\
& 5630*a^4*b^3*c^6 - 2295*a^4*b^4*c^5 + 3563*a^4*b^5*c^4 + 1260*a^4*b^6*c^3 \\
& - 740*a^4*b^7*c^2 + 3314*a^5*b^2*c^6 - 1456*a^5*b^3*c^5 - 2771*a^5*b^4*c^4 \\
& + 308*a^5*b^5*c^3 + 732*a^5*b^6*c^2 + 1572*a^6*b^2*c^5 + 576*a^6*b^3*c^4 - \\
& 696*a^6*b^4*c^3 - 300*a^6*b^5*c^2 + 192*a^7*b^2*c^4 + 272*a^7*b^3*c^3 + 44* \\
& a^7*b^4*c^2 - 32*a^8*b^2*c^3 + 148*a*b*c^{11} + 24*a*b^{11}*c))/c^8)*(-(8*a*c^7 \\
& + b^8 + 24*a^2*c^6 + 24*a^3*c^5 + 8*a^4*c^4 + b^5*(-(4*a*c - b^2)^3)^{(1/2)} \\
& - 2*b^2*c^6 + 3*b^4*c^4 - 3*b^6*c^2 - 18*a*b^2*c^5 + 24*a*b^4*c^3 + 3*b*c^ \\
& 4*(-(4*a*c - b^2)^3)^{(1/2)} - 54*a^2*b^2*c^4 + 33*a^2*b^4*c^2 - 38*a^3*b^2*c \\
& ^3 - 3*b^3*c^2*(-(4*a*c - b^2)^3)^{(1/2)} - 10*a*b^6*c + 3*a^2*b*c^2*(-(4*a*c \\
& - b^2)^3)^{(1/2)} + 6*a*b*c^3*(-(4*a*c - b^2)^3)^{(1/2)} - 4*a*b^3*c*(-(4*a*c \\
& - b^2)^3)^{(1/2)})/(2*(16*a^2*c^8 + b^4*c^6 - 8*a*b^2*c^7)))^{(1/2)}*i)/((4096 \\
& *(16*a*b^{11} + 274*a*c^{11} - 78*b*c^{11} + 4*b^{11}*c - 4*b^{12} + 33*c^{12} - 16*a^2 \\
& *b^{10} - 16*a^3*b^9 + 40*a^4*b^8 - 16*a^5*b^7 - 16*a^6*b^6 + 16*a^7*b^5 - 4* \\
& a^8*b^4 + 1008*a^2*c^{10} + 2156*a^3*c^9 + 2954*a^4*c^8 + 2688*a^5*c^7 + 1624
\end{aligned}$$

$$\begin{aligned}
& a^6c^6 + 628a^7c^5 + 141a^8c^4 + 14a^9c^3 - 64b^2c^{10} + 268b^3c^9 - 26b^4c^8 - 348b^5c^7 + 144b^6c^6 + 208b^7c^5 - 123b^8c^4 - 54b^9c^3 + 40b^{10}c^2 - 520a^2b^2c^9 + 1516a^2b^3c^8 + 144a^2b^4c^7 - 1564a^2b^5c^6 + 228a^2b^6c^5 + 740a^2b^7c^4 - 146a^2b^8c^3 - 164a^2b^9c^2 - 1624a^2b^2c^9 - 112a^2b^9c - 2676a^3b^3c^8 + 128a^3b^8c - 2588a^4b^3c^7 + 56a^4b^7c - 1388a^5b^3c^6 - 184a^5b^6c - 264a^6b^3c^5 + 80a^6b^5c + 116a^7b^3c^4 + 32a^7b^4c + 74a^8b^3c^3 - 28a^8b^3c + 12a^9b^3c^2 + 4a^9b^2c - 1820a^2b^2c^8 + 3576a^2b^3c^7 + 1032a^2b^4c^6 - 2792a^2b^5c^5 - 236a^2b^6c^4 + 920a^2b^7c^3 + 64a^2b^8c^2 - 3584a^3b^2c^7 + 4472a^3b^3c^6 + 2236a^3b^4c^5 - 2436a^3b^5c^4 - 744a^3b^6c^3 + 464a^3b^7c^2 - 4336a^4b^2c^6 + 3040a^4b^3c^5 + 2390a^4b^4c^4 - 964a^4b^5c^3 - 592a^4b^6c^2 - 3284a^5b^2c^5 + 908a^5b^3c^4 + 1364a^5b^4c^3 - 40a^5b^5c^2 - 1500a^6b^2c^4 - 104a^6b^3c^3 + 384a^6b^4c^2 - 360a^7b^2c^3 - 144a^7b^3c^2 - 24a^8b^2c^2 - 544a^2b^3c^10 + 20a^2b^10c)/c^8 + ((((((2048*(48a^c^{15} + 272a^2c^{14} + 576a^3c^{13} + 576a^4c^{12} + 272a^5c^{11} + 48a^6c^{10} - 12b^2c^{14} + 20b^3c^{13} + 18b^4c^{12} - 46b^5c^{11} + 6b^6c^{10} + 26b^7c^9 - 12b^8c^8 - 140a^2b^2c^{13} + 288a^2b^3c^{12} + 30a^2b^4c^{11} - 240a^2b^5c^{10} + 74a^2b^6c^9 + 20a^2b^7c^8 - 416a^2b^2c^{13} - 736a^3b^3c^{12} - 544a^4b^2c^{11} - 144a^5b^3c^{10} - 360a^2b^2c^{12} + 728a^2b^3c^{11} - 50a^2b^4c^{10} - 182a^2b^5c^9 + 4a^2b^6c^8 - 360a^3b^2c^{11} + 544a^3b^3c^{10} + 10a^3b^4c^9 - 20a^3b^5c^8 - 172a^4b^2c^{10} + 116a^4b^3c^9 + 8a^4b^4c^8 - 44a^5b^2c^9 - 80a^2b^3c^{14}))/c^8 - (2048*\tan(x/2)*(-(8a^c^7 + b^8 + 24a^2c^6 + 24a^3c^5 + 8a^4c^4 + b^5*(-(4a^c - b^2)^3)^{1/2} - 2b^2c^6 + 3b^4c^4 - 3b^6c^2 - 18a^2b^2c^5 + 24a^2b^4c^3 + 3b^2c^4*(-(4a^c - b^2)^3)^{1/2} - 54a^2b^2c^4 + 33a^2b^4c^2 - 38a^3b^2c^3 - 3b^3c^2*(-(4a^c - b^2)^3)^{1/2} - 10a^2b^6c + 3a^2b^2c^2*(-(4a^c - b^2)^3)^{1/2} + 6a^2b^3c^3*(-(4a^c - b^2)^3)^{1/2} - 4a^2b^3c^3*(-(4a^c - b^2)^3)^{1/2}))/((2*(16a^2c^8 + b^4c^6 - 8a^2b^2c^7)))^{1/2}*(32a^c^{16} - 64a^2c^{15} - 128a^3c^{14} + 64a^4c^{13} + 96a^5c^{12} - 8b^2c^{15} + 24b^3c^{14} - 32b^4c^{13} + 32b^5c^{12} - 24b^6c^{11} + 8b^7c^{10} + 144a^2b^2c^{14} - 200a^2b^3c^{13} + 184a^2b^4c^{12} - 56a^2b^5c^{11} - 8a^2b^6c^{10} + 288a^2b^2c^{14} + 352a^3b^3c^{13} - 32a^4b^2c^{12} - 320a^2b^2c^{13} + 8a^2b^3c^{12} + 96a^2b^4c^{11} - 8a^2b^5c^{10} - 272a^3b^2c^{12} + 40a^3b^3c^{11} + 8a^3b^4c^{10} - 56a^4b^2c^{11} - 96a^2b^3c^{15}))/c^8)*(-(8a^c^7 + b^8 + 24a^2c^6 + 24a^3c^5 + 8a^4c^4 + b^5*(-(4a^c - b^2)^3)^{1/2} - 2b^2c^6 + 3b^4c^4 - 3b^6c^2 - 18a^2b^2c^5 + 24a^2b^4c^3 + 3b^2c^4*(-(4a^c - b^2)^3)^{1/2} - 54a^2b^2c^4 + 33a^2b^4c^2 - 38a^3b^2c^3 - 3b^3c^2*(-(4a^c - b^2)^3)^{1/2} - 10a^2b^6c + 3a^2b^2c^2*(-(4a^c - b^2)^3)^{1/2} + 6a^2b^3c^3*(-(4a^c - b^2)^3)^{1/2} - 4a^2b^3c^3*(-(4a^c - b^2)^3)^{1/2}))/((2*(16a^2c^8 + b^4c^6 - 8a^2b^2c^7)))^{1/2} + (2048*\tan(x/2)*(24b^2c^{14} - 96a^2c^{14} - 8c^{15} + 152a^2c^{13} + 952a^3c^{12} + 1096a^4c^{11} + 304a^5c^{10} - 152a^6c^9 - 72a^7c^8 + 2b^2c^{13} - 38b^3c^{12} - 7b^4c^{11} + 39b^5c^{10} - 15b^6c^9 + 35b^7c^8 - 44b^8c^7 - 4b^9c^6 + 24b^{10}c^5 - 8b^{11}c^4 + 68a^2b^2c^{12} + 42a^2b^3c
\end{aligned}$$



$$\begin{aligned}
& ^{11} - 159*a*b^4*c^{10} - 400*a*b^5*c^9 + 537*a*b^6*c^8 + 68*a*b^7*c^7 - 276*a \\
& *b^8*c^6 + 72*a*b^9*c^5 + 8*a*b^{10}*c^4 - 944*a^2*b*c^{12} - 2520*a^3*b*c^{11} - \\
& 1824*a^4*b*c^{10} - 272*a^5*b*c^9 + 88*a^6*b*c^8 + 584*a^2*b^2*c^{11} + 1742*a \\
& ^2*b^3*c^{10} - 1645*a^2*b^4*c^9 - 795*a^2*b^5*c^8 + 1132*a^2*b^6*c^7 - 112*a \\
& ^2*b^7*c^6 - 112*a^2*b^8*c^5 + 8*a^2*b^9*c^4 + 476*a^3*b^2*c^{10} + 2766*a^3* \\
& b^3*c^9 - 1705*a^3*b^4*c^8 - 396*a^3*b^5*c^7 + 456*a^3*b^6*c^6 - 56*a^3*b^7 \\
& *c^5 - 8*a^3*b^8*c^4 + 230*a^4*b^2*c^9 + 880*a^4*b^3*c^8 - 656*a^4*b^4*c^7 \\
& + 140*a^4*b^5*c^6 + 72*a^4*b^6*c^5 + 464*a^5*b^2*c^8 - 192*a^5*b^3*c^7 - 22 \\
& 0*a^5*b^4*c^6 + 256*a^6*b^2*c^7 + 136*a*b*c^{13})/c^8)*(-(8*a*c^7 + b^8 + 24 \\
& *a^2*c^6 + 24*a^3*c^5 + 8*a^4*c^4 + b^5*(-(4*a*c - b^2)^3)^{(1/2)} - 2*b^2*c^ \\
& 6 + 3*b^4*c^4 - 3*b^6*c^2 - 18*a*b^2*c^5 + 24*a*b^4*c^3 + 3*b*c^4*(-(4*a*c \\
& - b^2)^3)^{(1/2)} - 54*a^2*b^2*c^4 + 33*a^2*b^4*c^2 - 38*a^3*b^2*c^3 - 3*b^3*c^2*(-(4*a*c \\
& - b^2)^3)^{(1/2)} - 10*a*b^6*c + 3*a^2*b*c^2*(-(4*a*c - b^2)^3)^{(1/2)} + 6*a*b \\
& *c^3*(-(4*a*c - b^2)^3)^{(1/2)} - 4*a*b^3*c*(-(4*a*c - b^2)^3)^{(1/2)))/(2*(16*a^2*c^8 + b^4*c^6 - 8*a*b^2*c^7))^{(1/2)} + (2048*(236*a*c^{13} - \\
& 32*b*c^{13} + 12*c^{14} + 1084*a^2*c^{12} + 2328*a^3*c^{11} + 2784*a^4*c^{10} + 1948 \\
& *a^5*c^9 + 780*a^6*c^8 + 160*a^7*c^7 + 12*a^8*c^6 - 39*b^2*c^{12} + 121*b^3*c \\
& ^{11} + 61*b^4*c^{10} - 220*b^5*c^9 - 36*b^6*c^8 + 232*b^7*c^7 - 28*b^8*c^6 - 1 \\
& 27*b^9*c^5 + 42*b^{10}*c^4 + 26*b^{11}*c^3 - 12*b^{12}*c^2 - 635*a*b^2*c^{11} + 130 \\
& 0*a*b^3*c^{10} + 608*a*b^4*c^9 - 1792*a*b^5*c^8 - 60*a*b^6*c^7 + 1218*a*b^7*c \\
& ^6 - 249*a*b^8*c^5 - 340*a*b^9*c^4 + 98*a*b^{10}*c^3 + 20*a*b^{11}*c^2 - 1616*a \\
& ^2*b*c^{11} - 3160*a^3*b*c^{10} - 3440*a^4*b*c^9 - 2132*a^5*b*c^8 - 704*a^6*b*c \\
& ^7 - 96*a^7*b*c^6 - 2242*a^2*b^2*c^{10} + 4146*a^2*b^3*c^9 + 1420*a^2*b^4*c^8 \\
& - 4158*a^2*b^5*c^7 + 77*a^2*b^6*c^6 + 1735*a^2*b^7*c^5 - 234*a^2*b^8*c^4 - \\
& 222*a^2*b^9*c^3 + 4*a^2*b^{10}*c^2 - 3714*a^3*b^2*c^9 + 6252*a^3*b^3*c^8 + 1 \\
& 730*a^3*b^4*c^7 - 4300*a^3*b^5*c^6 - 79*a^3*b^6*c^5 + 968*a^3*b^7*c^4 + 2*a \\
& ^3*b^8*c^3 - 20*a^3*b^9*c^2 - 3523*a^4*b^2*c^8 + 5025*a^4*b^3*c^7 + 1339*a^ \\
& 4*b^4*c^6 - 2082*a^4*b^5*c^5 - 192*a^4*b^6*c^4 + 156*a^4*b^7*c^3 + 8*a^4*b^ \\
& 8*c^2 - 2031*a^5*b^2*c^7 + 2104*a^5*b^3*c^6 + 634*a^5*b^4*c^5 - 388*a^5*b^5 \\
& *c^4 - 60*a^5*b^6*c^3 - 676*a^6*b^2*c^6 + 364*a^6*b^3*c^5 + 136*a^6*b^4*c^4 \\
& - 100*a^7*b^2*c^5 - 404*a*b*c^{12})/c^8)*(-(8*a*c^7 + b^8 + 24*a^2*c^6 + 24 \\
& *a^3*c^5 + 8*a^4*c^4 + b^5*(-(4*a*c - b^2)^3)^{(1/2)} - 2*b^2*c^6 + 3*b^4*c^4 \\
& - 3*b^6*c^2 - 18*a*b^2*c^5 + 24*a*b^4*c^3 + 3*b*c^4*(-(4*a*c - b^2)^3)^{(1/ \\
& 2)} - 54*a^2*b^2*c^4 + 33*a^2*b^4*c^2 - 38*a^3*b^2*c^3 - 3*b^3*c^2*(-(4*a*c \\
& - b^2)^3)^{(1/2)} - 10*a*b^6*c + 3*a^2*b*c^2*(-(4*a*c - b^2)^3)^{(1/2)} + 6*a*b \\
& *c^3*(-(4*a*c - b^2)^3)^{(1/2)} - 4*a*b^3*c*(-(4*a*c - b^2)^3)^{(1/2)))/(2*(16* \\
& a^2*c^8 + b^4*c^6 - 8*a*b^2*c^7))^{(1/2)} - (2048*\tan(x/2)*(20*a*b^{12} + 42*a \\
& *c^{12} - 58*b*c^{12} + 4*b^{12}*c - 4*b^{13} + 22*c^{13} - 40*a^2*b^{11} + 40*a^3*b^{10} \\
& - 20*a^4*b^9 + 4*a^5*b^8 - 214*a^2*c^{11} - 938*a^3*c^{10} - 1538*a^4*c^9 - 12 \\
& 78*a^5*c^8 - 498*a^6*c^7 - 14*a^7*c^6 + 52*a^8*c^5 + 12*a^9*c^4 + 14*b^2*c^ \\
& 11 + 34*b^3*c^{10} + 59*b^4*c^9 - 39*b^5*c^8 - 160*b^6*c^7 + 112*b^7*c^6 + 10 \\
& 5*b^8*c^5 - 89*b^9*c^4 - 28*b^{10}*c^3 + 28*b^{11}*c^2 - 518*a*b^2*c^{10} - 264*a \\
& *b^3*c^9 + 1339*a*b^4*c^8 - 92*a*b^5*c^7 - 1312*a*b^6*c^6 + 268*a*b^7*c^5 + \\
& 649*a*b^8*c^4 - 124*a*b^9*c^3 - 180*a*b^{10}*c^2 + 1550*a^2*b*c^{10} - 160*a^2 \\
& *b^{10}*c + 3488*a^3*b*c^9 + 320*a^3*b^9*c + 3350*a^4*b*c^8 - 300*a^4*b^8*c +
\end{aligned}$$

$$\begin{aligned}
& 1092*a^5*b*c^7 + 136*a^5*b^7*c - 462*a^6*b*c^6 - 24*a^6*b^6*c - 440*a^7*b*c^5 - 92*a^8*b*c^4 - 1568*a^2*b^2*c^9 - 2708*a^2*b^3*c^8 + 3564*a^2*b^4*c^7 \\
& + 1964*a^2*b^5*c^6 - 2790*a^2*b^6*c^5 - 922*a^2*b^7*c^4 + 1048*a^2*b^8*c^3 + 276*a^2*b^9*c^2 - 652*a^3*b^2*c^8 - 6280*a^3*b^3*c^7 + 2020*a^3*b^4*c^6 \\
& + 4988*a^3*b^5*c^5 - 1118*a^3*b^6*c^4 - 2008*a^3*b^7*c^3 + 140*a^3*b^8*c^2 + 2350*a^4*b^2*c^7 - 5630*a^4*b^3*c^6 - 2295*a^4*b^4*c^5 + 3563*a^4*b^5*c^4 \\
& + 1260*a^4*b^6*c^3 - 740*a^4*b^7*c^2 + 3314*a^5*b^2*c^6 - 1456*a^5*b^3*c^5 - 2771*a^5*b^4*c^4 + 308*a^5*b^5*c^3 + 732*a^5*b^6*c^2 + 1572*a^6*b^2*c^5 \\
& + 576*a^6*b^3*c^4 - 696*a^6*b^4*c^3 - 300*a^6*b^5*c^2 + 192*a^7*b^2*c^4 + 272*a^7*b^3*c^3 + 44*a^7*b^4*c^2 - 32*a^8*b^2*c^3 + 148*a*b*c^11 + 24*a*b^11*c) \\
& /c^8)*(-(8*a*c^7 + b^8 + 24*a^2*c^6 + 24*a^3*c^5 + 8*a^4*c^4 + b^5*(-(4*a*c - b^2)^3)^(1/2) - 2*b^2*c^6 + 3*b^4*c^4 - 3*b^6*c^2 - 18*a*b^2*c^5 + 24*a*b^4*c^3 + 3*b*c^4*(-(4*a*c - b^2)^3)^(1/2) - 54*a^2*b^2*c^4 + 33*a^2*b^4*c^2 - 38*a^3*b^2*c^3 - 3*b^3*c^2*(-(4*a*c - b^2)^3)^(1/2) - 10*a*b^6*c + 3*a^2*b*c^2*(-(4*a*c - b^2)^3)^(1/2) + 6*a*b*c^3*(-(4*a*c - b^2)^3)^(1/2) - 4*a*b^3*c*(-(4*a*c - b^2)^3)^(1/2))/(2*(16*a^2*c^8 + b^4*c^6 - 8*a*b^2*c^7)))^(1/2) + (((((2048*(48*a*c^15 + 272*a^2*c^14 + 576*a^3*c^13 + 576*a^4*c^12 + 272*a^5*c^11 + 48*a^6*c^10 - 12*b^2*c^14 + 20*b^3*c^13 + 18*b^4*c^12 - 46*b^5*c^11 + 6*b^6*c^10 + 26*b^7*c^9 - 12*b^8*c^8 - 140*a*b^2*c^13 + 288*a*b^3*c^12 + 30*a*b^4*c^11 - 240*a*b^5*c^10 + 74*a*b^6*c^9 + 20*a*b^7*c^8 - 416*a^2*b*c^13 - 736*a^3*b*c^12 - 544*a^4*b*c^11 - 144*a^5*b*c^10 - 360*a^2*b^2*c^12 + 728*a^2*b^3*c^11 - 50*a^2*b^4*c^10 - 182*a^2*b^5*c^9 + 4*a^2*b^6*c^8 - 360*a^3*b^2*c^11 + 544*a^3*b^3*c^10 + 10*a^3*b^4*c^9 - 20*a^3*b^5*c^8 - 172*a^4*b^2*c^10 + 116*a^4*b^3*c^9 + 8*a^4*b^4*c^8 - 44*a^5*b^2*c^9 - 80*a*b*c^14))/c^8 + (2048*tan(x/2)*(-(8*a*c^7 + b^8 + 24*a^2*c^6 + 24*a^3*c^5 + 8*a^4*c^4 + b^5*(-(4*a*c - b^2)^3)^(1/2) - 2*b^2*c^6 + 3*b^4*c^4 - 3*b^6*c^2 - 18*a*b^2*c^5 + 24*a*b^4*c^3 + 3*b*c^4*(-(4*a*c - b^2)^3)^(1/2) - 54*a^2*b^2*c^4 + 33*a^2*b^4*c^2 - 38*a^3*b^2*c^3 - 3*b^3*c^2*(-(4*a*c - b^2)^3)^(1/2) - 10*a*b^6*c + 3*a^2*b*c^2*(-(4*a*c - b^2)^3)^(1/2) + 6*a*b*c^3*(-(4*a*c - b^2)^3)^(1/2) - 4*a*b^3*c*(-(4*a*c - b^2)^3)^(1/2))/(2*(16*a^2*c^8 + b^4*c^6 - 8*a*b^2*c^7)))^(1/2)*(32*a*c^16 - 64*a^2*c^15 - 128*a^3*c^14 + 64*a^4*c^13 + 96*a^5*c^12 - 8*b^2*c^15 + 24*b^3*c^14 - 32*b^4*c^13 + 32*b^5*c^12 - 24*b^6*c^11 + 8*b^7*c^10 + 144*a*b^2*c^14 - 200*a*b^3*c^13 + 184*a*b^4*c^12 - 56*a*b^5*c^11 - 8*a*b^6*c^10 + 288*a^2*b*c^14 + 352*a^3*b*c^13 - 32*a^4*b*c^12 - 320*a^2*b^2*c^13 + 8*a^2*b^3*c^12 + 96*a^2*b^4*c^11 - 8*a^2*b^5*c^10 - 272*a^3*b^2*c^12 + 40*a^3*b^3*c^11 + 8*a^3*b^4*c^10 - 56*a^4*b^2*c^11 - 96*a*b*c^15))/c^8)*(-(8*a*c^7 + b^8 + 24*a^2*c^6 + 24*a^3*c^5 + 8*a^4*c^4 + b^5*(-(4*a*c - b^2)^3)^(1/2) - 2*b^2*c^6 + 3*b^4*c^4 - 3*b^6*c^2 - 18*a*b^2*c^5 + 24*a*b^4*c^3 + 3*b*c^4*(-(4*a*c - b^2)^3)^(1/2) - 54*a^2*b^2*c^4 + 33*a^2*b^4*c^2 - 38*a^3*b^2*c^3 - 3*b^3*c^2*(-(4*a*c - b^2)^3)^(1/2) - 10*a*b^6*c + 3*a^2*b*c^2*(-(4*a*c - b^2)^3)^(1/2) + 6*a*b*c^3*(-(4*a*c - b^2)^3)^(1/2) - 4*a*b^3*c*(-(4*a*c - b^2)^3)^(1/2))/(2*(16*a^2*c^8 + b^4*c^6 - 8*a*b^2*c^7)))^(1/2) - (2048*tan(x/2)*(24*b*c^14 - 96*a*c^14 - 8*c^15 + 152*a^2*c^13 + 952*a^3*c^12 + 1096*a^4*c^11 + 304*a^5*c^10 - 152*a^6*c^9 - 72*a^7*c^8 + 2*b^2*c^13 - 38*b^3*c^12 - 7*b^4*c^11 + 39*b^5*c^10 -
\end{aligned}$$

$$\begin{aligned}
& 15*b^6*c^9 + 35*b^7*c^8 - 44*b^8*c^7 - 4*b^9*c^6 + 24*b^{10}*c^5 - 8*b^{11}*c^4 \\
& + 68*a*b^2*c^{12} + 42*a*b^3*c^{11} - 159*a*b^4*c^{10} - 400*a*b^5*c^9 + 537*a*b \\
& ^6*c^8 + 68*a*b^7*c^7 - 276*a*b^8*c^6 + 72*a*b^9*c^5 + 8*a*b^{10}*c^4 - 944*a \\
& ^2*b*c^{12} - 2520*a^3*b*c^{11} - 1824*a^4*b*c^{10} - 272*a^5*b*c^9 + 88*a^6*b*c^ \\
& 8 + 584*a^2*b^2*c^{11} + 1742*a^2*b^3*c^{10} - 1645*a^2*b^4*c^9 - 795*a^2*b^5*c \\
& ^8 + 1132*a^2*b^6*c^7 - 112*a^2*b^7*c^6 - 112*a^2*b^8*c^5 + 8*a^2*b^9*c^4 + \\
& 476*a^3*b^2*c^{10} + 2766*a^3*b^3*c^9 - 1705*a^3*b^4*c^8 - 396*a^3*b^5*c^7 + \\
& 456*a^3*b^6*c^6 - 56*a^3*b^7*c^5 - 8*a^3*b^8*c^4 + 230*a^4*b^2*c^9 + 880*a \\
& ^4*b^3*c^8 - 656*a^4*b^4*c^7 + 140*a^4*b^5*c^6 + 72*a^4*b^6*c^5 + 464*a^5*b \\
& ^2*c^8 - 192*a^5*b^3*c^7 - 220*a^5*b^4*c^6 + 256*a^6*b^2*c^7 + 136*a*b*c^{13} \\
& ))/c^8)*(-(8*a*c^7 + b^8 + 24*a^2*c^6 + 24*a^3*c^5 + 8*a^4*c^4 + b^5*(-(4*a \\
& *c - b^2)^3)^{(1/2)} - 2*b^2*c^6 + 3*b^4*c^4 - 3*b^6*c^2 - 18*a*b^2*c^5 + 24* \\
& a*b^4*c^3 + 3*b*c^4*(-(4*a*c - b^2)^3)^{(1/2)} - 54*a^2*b^2*c^4 + 33*a^2*b^4* \\
& c^2 - 38*a^3*b^2*c^3 - 3*b^3*c^2*(-(4*a*c - b^2)^3)^{(1/2)} - 10*a*b^6*c + 3* \\
& a^2*b*c^2*(-(4*a*c - b^2)^3)^{(1/2)} + 6*a*b*c^3*(-(4*a*c - b^2)^3)^{(1/2)} - 4 \\
& *a*b^3*c*(-(4*a*c - b^2)^3)^{(1/2)})/(2*(16*a^2*c^8 + b^4*c^6 - 8*a*b^2*c^7)) \\
& )^{(1/2)} + (2048*(236*a*c^{13} - 32*b*c^{13} + 12*c^{14} + 1084*a^2*c^{12} + 2328*a^ \\
& 3*c^{11} + 2784*a^4*c^{10} + 1948*a^5*c^9 + 780*a^6*c^8 + 160*a^7*c^7 + 12*a^8* \\
& c^6 - 39*b^2*c^{12} + 121*b^3*c^{11} + 61*b^4*c^{10} - 220*b^5*c^9 - 36*b^6*c^8 + \\
& 232*b^7*c^7 - 28*b^8*c^6 - 127*b^9*c^5 + 42*b^{10}*c^4 + 26*b^{11}*c^3 - 12*b^ \\
& 12*c^2 - 635*a*b^2*c^{11} + 1300*a*b^3*c^{10} + 608*a*b^4*c^9 - 1792*a*b^5*c^8 \\
& - 60*a*b^6*c^7 + 1218*a*b^7*c^6 - 249*a*b^8*c^5 - 340*a*b^9*c^4 + 98*a*b^{10} \\
& *c^3 + 20*a*b^{11}*c^2 - 1616*a^2*b*c^{11} - 3160*a^3*b*c^{10} - 3440*a^4*b*c^9 - \\
& 2132*a^5*b*c^8 - 704*a^6*b*c^7 - 96*a^7*b*c^6 - 2242*a^2*b^2*c^{10} + 4146*a \\
& ^2*b^3*c^9 + 1420*a^2*b^4*c^8 - 4158*a^2*b^5*c^7 + 77*a^2*b^6*c^6 + 1735*a^ \\
& 2*b^7*c^5 - 234*a^2*b^8*c^4 - 222*a^2*b^9*c^3 + 4*a^2*b^{10}*c^2 - 3714*a^3*b \\
& ^2*c^9 + 6252*a^3*b^3*c^8 + 1730*a^3*b^4*c^7 - 4300*a^3*b^5*c^6 - 79*a^3*b^ \\
& 6*c^5 + 968*a^3*b^7*c^4 + 2*a^3*b^8*c^3 - 20*a^3*b^9*c^2 - 3523*a^4*b^2*c^8 \\
& + 5025*a^4*b^3*c^7 + 1339*a^4*b^4*c^6 - 2082*a^4*b^5*c^5 - 192*a^4*b^6*c^4 \\
& + 156*a^4*b^7*c^3 + 8*a^4*b^8*c^2 - 2031*a^5*b^2*c^7 + 2104*a^5*b^3*c^6 + \\
& 634*a^5*b^4*c^5 - 388*a^5*b^5*c^4 - 60*a^5*b^6*c^3 - 676*a^6*b^2*c^6 + 364* \\
& a^6*b^3*c^5 + 136*a^6*b^4*c^4 - 100*a^7*b^2*c^5 - 404*a*b*c^{12}))/c^8)*(-(8* \\
& a*c^7 + b^8 + 24*a^2*c^6 + 24*a^3*c^5 + 8*a^4*c^4 + b^5*(-(4*a*c - b^2)^3)^ \\
& (1/2) - 2*b^2*c^6 + 3*b^4*c^4 - 3*b^6*c^2 - 18*a*b^2*c^5 + 24*a*b^4*c^3 + 3 \\
& *b*c^4*(-(4*a*c - b^2)^3)^{(1/2)} - 54*a^2*b^2*c^4 + 33*a^2*b^4*c^2 - 38*a^3* \\
& b^2*c^3 - 3*b^3*c^2*(-(4*a*c - b^2)^3)^{(1/2)} - 10*a*b^6*c + 3*a^2*b*c^2*(-( \\
& 4*a*c - b^2)^3)^{(1/2)} + 6*a*b*c^3*(-(4*a*c - b^2)^3)^{(1/2)} - 4*a*b^3*c*(-(4 \\
& *a*c - b^2)^3)^{(1/2)})/(2*(16*a^2*c^8 + b^4*c^6 - 8*a*b^2*c^7))^{(1/2)} + (20 \\
& 48*\tan(x/2)*(20*a*b^{12} + 42*a*c^{12} - 58*b*c^{12} + 4*b^{12}*c - 4*b^{13} + 22*c^1 \\
& 3 - 40*a^2*b^{11} + 40*a^3*b^{10} - 20*a^4*b^9 + 4*a^5*b^8 - 214*a^2*c^{11} - 938 \\
& *a^3*c^{10} - 1538*a^4*c^9 - 1278*a^5*c^8 - 498*a^6*c^7 - 14*a^7*c^6 + 52*a^8 \\
& *c^5 + 12*a^9*c^4 + 14*b^2*c^{11} + 34*b^3*c^{10} + 59*b^4*c^9 - 39*b^5*c^8 - 1 \\
& 60*b^6*c^7 + 112*b^7*c^6 + 105*b^8*c^5 - 89*b^9*c^4 - 28*b^{10}*c^3 + 28*b^{11} \\
& *c^2 - 518*a*b^2*c^{10} - 264*a*b^3*c^9 + 1339*a*b^4*c^8 - 92*a*b^5*c^7 - 131 \\
& 2*a*b^6*c^6 + 268*a*b^7*c^5 + 649*a*b^8*c^4 - 124*a*b^9*c^3 - 180*a*b^{10}*c^
\end{aligned}$$

$$\begin{aligned}
& 2 + 1550a^2b^2c^{10} - 160a^2b^{10}c + 3488a^3b^2c^9 + 320a^3b^9c + 3350a^4b^2c^8 - 300a^4b^8c + 1092a^5b^2c^7 + 136a^5b^7c - 462a^6b^2c^6 - 24a^6b^6c - 440a^7b^2c^5 - 92a^8b^2c^4 - 1568a^2b^2c^9 - 2708a^2b^3c^8 + 3564a^2b^4c^7 + 1964a^2b^5c^6 - 2790a^2b^6c^5 - 922a^2b^7c^4 + 1048a^2b^8c^3 + 276a^2b^9c^2 - 652a^3b^2c^8 - 6280a^3b^3c^7 + 2020a^3b^4c^6 + 4988a^3b^5c^5 - 1118a^3b^6c^4 - 2008a^3b^7c^3 + 140a^3b^8c^2 + 2350a^4b^2c^7 - 5630a^4b^3c^6 - 2295a^4b^4c^5 + 3563a^4b^5c^4 + 1260a^4b^6c^3 - 740a^4b^7c^2 + 3314a^5b^2c^6 - 1456a^5b^3c^5 - 2771a^5b^4c^4 + 308a^5b^5c^3 + 732a^5b^6c^2 + 1572a^6b^2c^5 + 576a^6b^3c^4 - 696a^6b^4c^3 - 300a^6b^5c^2 + 192a^7b^2c^4 + 272a^7b^3c^3 + 44a^7b^4c^2 - 32a^8b^2c^3 + 148a^8b^2c^3 + 24a^8b^{11}c)/c^8 * (- (8a^2c^7 + b^8 + 24a^2c^6 + 24a^3c^5 + 8a^4c^4 + b^5 * (- (4a^2c - b^2)^3)^{1/2}) - 2b^2c^6 + 3b^4c^4 - 3b^6c^2 - 18a^2b^2c^5 + 24a^2b^4c^3 + 3b^2c^4 * (- (4a^2c - b^2)^3)^{1/2}) - 54a^2b^2c^4 + 33a^2b^4c^2 - 38a^3b^2c^3 - 3b^3c^2 * (- (4a^2c - b^2)^3)^{1/2} - 10a^2b^6c + 3a^2b^2c^2 * (- (4a^2c - b^2)^3)^{1/2} + 6a^2b^2c^3 * (- (4a^2c - b^2)^3)^{1/2} - 4a^2b^3c * (- (4a^2c - b^2)^3)^{1/2}) / (2 * (16a^2c^8 + b^4c^6 - 8a^2b^2c^7))^{1/2}) * (- (8a^2c^7 + b^8 + 24a^2c^6 + 24a^3c^5 + 8a^4c^4 + b^5 * (- (4a^2c - b^2)^3)^{1/2}) - 2b^2c^6 + 3b^4c^4 - 3b^6c^2 - 18a^2b^2c^5 + 24a^2b^4c^3 + 3b^2c^4 * (- (4a^2c - b^2)^3)^{1/2}) - 54a^2b^2c^4 + 33a^2b^4c^2 - 38a^3b^2c^3 - 3b^3c^2 * (- (4a^2c - b^2)^3)^{1/2} - 10a^2b^6c + 3a^2b^2c^2 * (- (4a^2c - b^2)^3)^{1/2} + 6a^2b^2c^3 * (- (4a^2c - b^2)^3)^{1/2} - 4a^2b^3c * (- (4a^2c - b^2)^3)^{1/2}) / (2 * (16a^2c^8 + b^4c^6 - 8a^2b^2c^7))^{1/2}) * 2i - ((tan(x/2) * (2b - c)) / c^2 + (tan(x/2)^3 * (2b + c)) / c^2) / (2 * tan(x/2)^2 + tan(x/2)^4 + 1) + atan((((((((2048 * (48a^2c^15 + 272a^2c^14 + 576a^3c^13 + 576a^4c^12 + 272a^5c^11 + 48a^6c^10 - 12b^2c^14 + 20b^3c^13 + 18b^4c^12 - 46b^5c^11 + 6b^6c^10 + 26b^7c^9 - 12b^8c^8 - 140a^2b^2c^13 + 288a^2b^3c^12 + 30a^2b^4c^11 - 240a^2b^5c^10 + 74a^2b^6c^9 + 20a^2b^7c^8 - 416a^2b^2c^13 - 736a^3b^2c^12 - 544a^4b^2c^11 - 144a^5b^2c^10 - 360a^2b^2c^12 + 728a^2b^3c^11 - 50a^2b^4c^10 - 182a^2b^5c^9 + 4a^2b^6c^8 - 360a^3b^2c^11 + 544a^3b^3c^10 + 10a^3b^4c^9 - 20a^3b^5c^8 - 172a^4b^2c^10 + 116a^4b^3c^9 + 8a^4b^4c^8 - 44a^5b^2c^9 - 80a^2b^2c^14)) / c^8 - (2048 * tan(x/2) * (- (8a^2c^7 + b^8 + 24a^2c^6 + 24a^3c^5 + 8a^4c^4 - b^5 * (- (4a^2c - b^2)^3)^{1/2}) - 2b^2c^6 + 3b^4c^4 - 3b^6c^2 - 18a^2b^2c^5 + 24a^2b^4c^3 - 3b^2c^4 * (- (4a^2c - b^2)^3)^{1/2}) - 54a^2b^2c^4 + 33a^2b^4c^2 - 38a^3b^2c^3 + 3b^3c^2 * (- (4a^2c - b^2)^3)^{1/2} - 10a^2b^6c - 3a^2b^2c^2 * (- (4a^2c - b^2)^3)^{1/2} - 6a^2b^2c^3 * (- (4a^2c - b^2)^3)^{1/2} + 4a^2b^3c * (- (4a^2c - b^2)^3)^{1/2}) / (2 * (16a^2c^8 + b^4c^6 - 8a^2b^2c^7))^{1/2}) * (32a^2c^16 - 64a^2c^15 - 128a^3c^14 + 64a^4c^13 + 96a^5c^12 - 8b^2c^15 + 24b^3c^14 - 32b^4c^13 + 32b^5c^12 - 24b^6c^11 + 8b^7c^10 + 144a^2b^2c^14 - 200a^2b^3c^13 + 184a^2b^4c^12 - 56a^2b^5c^11 - 8a^2b^6c^10 + 288a^2b^2c^14 + 352a^3b^2c^13 - 32a^4b^2c^12 - 320a^2b^2c^13 + 8a^2b^3c^12 + 96a^2b^4c^11 - 8a^2b^5c^10 - 272a^3b^2c^12 + 40a^3b^3c^11 + 8a^3b^4c^10 - 56a^4b^2c^11 - 96a^2b^
\end{aligned}$$

$$\begin{aligned}
& c^{15})/c^8)*(-(8*a*c^7 + b^8 + 24*a^2*c^6 + 24*a^3*c^5 + 8*a^4*c^4 - b^5*(- \\
& (4*a*c - b^2)^3)^{(1/2)} - 2*b^2*c^6 + 3*b^4*c^4 - 3*b^6*c^2 - 18*a*b^2*c^5 + \\
& 24*a*b^4*c^3 - 3*b*c^4*(-(4*a*c - b^2)^3)^{(1/2)} - 54*a^2*b^2*c^4 + 33*a^2* \\
& b^4*c^2 - 38*a^3*b^2*c^3 + 3*b^3*c^2*(-(4*a*c - b^2)^3)^{(1/2)} - 10*a*b^6*c \\
& - 3*a^2*b*c^2*(-(4*a*c - b^2)^3)^{(1/2)} - 6*a*b*c^3*(-(4*a*c - b^2)^3)^{(1/2)} \\
& + 4*a*b^3*c*(-(4*a*c - b^2)^3)^{(1/2)})/(2*(16*a^2*c^8 + b^4*c^6 - 8*a*b^2*c \\
& ^7)))^{(1/2)} + (2048*\tan(x/2)*(24*b*c^{14} - 96*a*c^{14} - 8*c^{15} + 152*a^2*c^{13} \\
& + 952*a^3*c^{12} + 1096*a^4*c^{11} + 304*a^5*c^{10} - 152*a^6*c^9 - 72*a^7*c^8 + \\
& 2*b^2*c^{13} - 38*b^3*c^{12} - 7*b^4*c^{11} + 39*b^5*c^{10} - 15*b^6*c^9 + 35*b^7* \\
& c^8 - 44*b^8*c^7 - 4*b^9*c^6 + 24*b^{10}*c^5 - 8*b^{11}*c^4 + 68*a*b^2*c^{12} + 4 \\
& 2*a*b^3*c^{11} - 159*a*b^4*c^{10} - 400*a*b^5*c^9 + 537*a*b^6*c^8 + 68*a*b^7*c^ \\
& 7 - 276*a*b^8*c^6 + 72*a*b^9*c^5 + 8*a*b^{10}*c^4 - 944*a^2*b*c^{12} - 2520*a^3 \\
& *b*c^{11} - 1824*a^4*b*c^{10} - 272*a^5*b*c^9 + 88*a^6*b*c^8 + 584*a^2*b^2*c^{11} \\
& + 1742*a^2*b^3*c^{10} - 1645*a^2*b^4*c^9 - 795*a^2*b^5*c^8 + 1132*a^2*b^6*c^ \\
& 7 - 112*a^2*b^7*c^6 - 112*a^2*b^8*c^5 + 8*a^2*b^9*c^4 + 476*a^3*b^2*c^{10} + \\
& 2766*a^3*b^3*c^9 - 1705*a^3*b^4*c^8 - 396*a^3*b^5*c^7 + 456*a^3*b^6*c^6 - 5 \\
& 6*a^3*b^7*c^5 - 8*a^3*b^8*c^4 + 230*a^4*b^2*c^9 + 880*a^4*b^3*c^8 - 656*a^4 \\
& *b^4*c^7 + 140*a^4*b^5*c^6 + 72*a^4*b^6*c^5 + 464*a^5*b^2*c^8 - 192*a^5*b^3 \\
& *c^7 - 220*a^5*b^4*c^6 + 256*a^6*b^2*c^7 + 136*a*b*c^{13})/c^8)*(-(8*a*c^7 + \\
& b^8 + 24*a^2*c^6 + 24*a^3*c^5 + 8*a^4*c^4 - b^5*(-(4*a*c - b^2)^3)^{(1/2)} - \\
& 2*b^2*c^6 + 3*b^4*c^4 - 3*b^6*c^2 - 18*a*b^2*c^5 + 24*a*b^4*c^3 - 3*b*c^4* \\
& (-(4*a*c - b^2)^3)^{(1/2)} - 54*a^2*b^2*c^4 + 33*a^2*b^4*c^2 - 38*a^3*b^2*c^3 \\
& + 3*b^3*c^2*(-(4*a*c - b^2)^3)^{(1/2)} - 10*a*b^6*c - 3*a^2*b*c^2*(-(4*a*c - \\
& b^2)^3)^{(1/2)} - 6*a*b*c^3*(-(4*a*c - b^2)^3)^{(1/2)} + 4*a*b^3*c*(-(4*a*c - \\
& b^2)^3)^{(1/2)})/(2*(16*a^2*c^8 + b^4*c^6 - 8*a*b^2*c^7)))^{(1/2)} + (2048*(236 \\
& *a*c^{13} - 32*b*c^{13} + 12*c^{14} + 1084*a^2*c^{12} + 2328*a^3*c^{11} + 2784*a^4*c^ \\
& 10 + 1948*a^5*c^9 + 780*a^6*c^8 + 160*a^7*c^7 + 12*a^8*c^6 - 39*b^2*c^{12} + \\
& 121*b^3*c^{11} + 61*b^4*c^{10} - 220*b^5*c^9 - 36*b^6*c^8 + 232*b^7*c^7 - 28*b^ \\
& 8*c^6 - 127*b^9*c^5 + 42*b^{10}*c^4 + 26*b^{11}*c^3 - 12*b^{12}*c^2 - 635*a*b^2*c \\
& ^{11} + 1300*a*b^3*c^{10} + 608*a*b^4*c^9 - 1792*a*b^5*c^8 - 60*a*b^6*c^7 + 121 \\
& 8*a*b^7*c^6 - 249*a*b^8*c^5 - 340*a*b^9*c^4 + 98*a*b^{10}*c^3 + 20*a*b^{11}*c^2 \\
& - 1616*a^2*b*c^{11} - 3160*a^3*b*c^{10} - 3440*a^4*b*c^9 - 2132*a^5*b*c^8 - 70 \\
& 4*a^6*b*c^7 - 96*a^7*b*c^6 - 2242*a^2*b^2*c^{10} + 4146*a^2*b^3*c^9 + 1420*a^ \\
& 2*b^4*c^8 - 4158*a^2*b^5*c^7 + 77*a^2*b^6*c^6 + 1735*a^2*b^7*c^5 - 234*a^2* \\
& b^8*c^4 - 222*a^2*b^9*c^3 + 4*a^2*b^{10}*c^2 - 3714*a^3*b^2*c^9 + 6252*a^3*b^ \\
& 3*c^8 + 1730*a^3*b^4*c^7 - 4300*a^3*b^5*c^6 - 79*a^3*b^6*c^5 + 968*a^3*b^7* \\
& c^4 + 2*a^3*b^8*c^3 - 20*a^3*b^9*c^2 - 3523*a^4*b^2*c^8 + 5025*a^4*b^3*c^7 \\
& + 1339*a^4*b^4*c^6 - 2082*a^4*b^5*c^5 - 192*a^4*b^6*c^4 + 156*a^4*b^7*c^3 + \\
& 8*a^4*b^8*c^2 - 2031*a^5*b^2*c^7 + 2104*a^5*b^3*c^6 + 634*a^5*b^4*c^5 - 38 \\
& 8*a^5*b^5*c^4 - 60*a^5*b^6*c^3 - 676*a^6*b^2*c^6 + 364*a^6*b^3*c^5 + 136*a^ \\
& 6*b^4*c^4 - 100*a^7*b^2*c^5 - 404*a*b*c^{12})/c^8)*(-(8*a*c^7 + b^8 + 24*a^2 \\
& *c^6 + 24*a^3*c^5 + 8*a^4*c^4 - b^5*(-(4*a*c - b^2)^3)^{(1/2)} - 2*b^2*c^6 + \\
& 3*b^4*c^4 - 3*b^6*c^2 - 18*a*b^2*c^5 + 24*a*b^4*c^3 - 3*b*c^4*(-(4*a*c - b^ \\
& 2)^3)^{(1/2)} - 54*a^2*b^2*c^4 + 33*a^2*b^4*c^2 - 38*a^3*b^2*c^3 + 3*b^3*c^2* \\
& (-(4*a*c - b^2)^3)^{(1/2)} - 10*a*b^6*c - 3*a^2*b*c^2*(-(4*a*c - b^2)^3)^{(1/2)}
\end{aligned}$$

$$\begin{aligned}
& ) - 6*a*b*c^3*(-(4*a*c - b^2)^3)^{(1/2)} + 4*a*b^3*c*(-(4*a*c - b^2)^3)^{(1/2)} \\
& )/(2*(16*a^2*c^8 + b^4*c^6 - 8*a*b^2*c^7))^{(1/2)} - (2048*\tan(x/2)*(20*a*b^12 + 42*a*c^12 - 58*b*c^12 + 4*b^12*c - 4*b^13 + 22*c^13 - 40*a^2*b^11 + 40 \\
& *a^3*b^10 - 20*a^4*b^9 + 4*a^5*b^8 - 214*a^2*c^11 - 938*a^3*c^10 - 1538*a^4 \\
& *c^9 - 1278*a^5*c^8 - 498*a^6*c^7 - 14*a^7*c^6 + 52*a^8*c^5 + 12*a^9*c^4 + \\
& 14*b^2*c^11 + 34*b^3*c^10 + 59*b^4*c^9 - 39*b^5*c^8 - 160*b^6*c^7 + 112*b^7 \\
& *c^6 + 105*b^8*c^5 - 89*b^9*c^4 - 28*b^10*c^3 + 28*b^11*c^2 - 518*a*b^2*c^1 \\
& 0 - 264*a*b^3*c^9 + 1339*a*b^4*c^8 - 92*a*b^5*c^7 - 1312*a*b^6*c^6 + 268*a* \\
& b^7*c^5 + 649*a*b^8*c^4 - 124*a*b^9*c^3 - 180*a*b^10*c^2 + 1550*a^2*b*c^10 \\
& - 160*a^2*b^10*c + 3488*a^3*b*c^9 + 320*a^3*b^9*c + 3350*a^4*b*c^8 - 300*a^ \\
& 4*b^8*c + 1092*a^5*b*c^7 + 136*a^5*b^7*c - 462*a^6*b*c^6 - 24*a^6*b^6*c - 4 \\
& 40*a^7*b*c^5 - 92*a^8*b*c^4 - 1568*a^2*b^2*c^9 - 2708*a^2*b^3*c^8 + 3564*a^ \\
& 2*b^4*c^7 + 1964*a^2*b^5*c^6 - 2790*a^2*b^6*c^5 - 922*a^2*b^7*c^4 + 1048*a^ \\
& 2*b^8*c^3 + 276*a^2*b^9*c^2 - 652*a^3*b^2*c^8 - 6280*a^3*b^3*c^7 + 2020*a^3 \\
& *b^4*c^6 + 4988*a^3*b^5*c^5 - 1118*a^3*b^6*c^4 - 2008*a^3*b^7*c^3 + 140*a^3 \\
& *b^8*c^2 + 2350*a^4*b^2*c^7 - 5630*a^4*b^3*c^6 - 2295*a^4*b^4*c^5 + 3563*a^ \\
& 4*b^5*c^4 + 1260*a^4*b^6*c^3 - 740*a^4*b^7*c^2 + 3314*a^5*b^2*c^6 - 1456*a^ \\
& 5*b^3*c^5 - 2771*a^5*b^4*c^4 + 308*a^5*b^5*c^3 + 732*a^5*b^6*c^2 + 1572*a^6 \\
& *b^2*c^5 + 576*a^6*b^3*c^4 - 696*a^6*b^4*c^3 - 300*a^6*b^5*c^2 + 192*a^7*b^ \\
& 2*c^4 + 272*a^7*b^3*c^3 + 44*a^7*b^4*c^2 - 32*a^8*b^2*c^3 + 148*a*b*c^11 + \\
& 24*a*b^11*c)/c^8)*(-(8*a*c^7 + b^8 + 24*a^2*c^6 + 24*a^3*c^5 + 8*a^4*c^4 - \\
& b^5*(-(4*a*c - b^2)^3)^{(1/2)} - 2*b^2*c^6 + 3*b^4*c^4 - 3*b^6*c^2 - 18*a*b^ \\
& 2*c^5 + 24*a*b^4*c^3 - 3*b*c^4*(-(4*a*c - b^2)^3)^{(1/2)} - 54*a^2*b^2*c^4 + \\
& 33*a^2*b^4*c^2 - 38*a^3*b^2*c^3 + 3*b^3*c^2*(-(4*a*c - b^2)^3)^{(1/2)} - 10*a \\
& *b^6*c - 3*a^2*b*c^2*(-(4*a*c - b^2)^3)^{(1/2)} - 6*a*b*c^3*(-(4*a*c - b^2)^3 \\
& )^{(1/2)} + 4*a*b^3*c*(-(4*a*c - b^2)^3)^{(1/2)})/(2*(16*a^2*c^8 + b^4*c^6 - 8* \\
& a*b^2*c^7))^{(1/2)}*i - (((((2048*(48*a*c^15 + 272*a^2*c^14 + 576*a^3*c^13 \\
& + 576*a^4*c^12 + 272*a^5*c^11 + 48*a^6*c^10 - 12*b^2*c^14 + 20*b^3*c^13 + 1 \\
& 8*b^4*c^12 - 46*b^5*c^11 + 6*b^6*c^10 + 26*b^7*c^9 - 12*b^8*c^8 - 140*a*b^2 \\
& *c^13 + 288*a*b^3*c^12 + 30*a*b^4*c^11 - 240*a*b^5*c^10 + 74*a*b^6*c^9 + 20 \\
& *a*b^7*c^8 - 416*a^2*b*c^13 - 736*a^3*b*c^12 - 544*a^4*b*c^11 - 144*a^5*b*c \\
& ^10 - 360*a^2*b^2*c^12 + 728*a^2*b^3*c^11 - 50*a^2*b^4*c^10 - 182*a^2*b^5*c \\
& ^9 + 4*a^2*b^6*c^8 - 360*a^3*b^2*c^11 + 544*a^3*b^3*c^10 + 10*a^3*b^4*c^9 - \\
& 20*a^3*b^5*c^8 - 172*a^4*b^2*c^10 + 116*a^4*b^3*c^9 + 8*a^4*b^4*c^8 - 44*a \\
& ^5*b^2*c^9 - 80*a*b*c^14))/c^8 + (2048*\tan(x/2)*(-(8*a*c^7 + b^8 + 24*a^2*c \\
& ^6 + 24*a^3*c^5 + 8*a^4*c^4 - b^5*(-(4*a*c - b^2)^3)^{(1/2)} - 2*b^2*c^6 + 3* \\
& b^4*c^4 - 3*b^6*c^2 - 18*a*b^2*c^5 + 24*a*b^4*c^3 - 3*b*c^4*(-(4*a*c - b^2) \\
& ^3)^{(1/2)} - 54*a^2*b^2*c^4 + 33*a^2*b^4*c^2 - 38*a^3*b^2*c^3 + 3*b^3*c^2*(- \\
& (4*a*c - b^2)^3)^{(1/2)} - 10*a*b^6*c - 3*a^2*b*c^2*(-(4*a*c - b^2)^3)^{(1/2)} \\
& - 6*a*b*c^3*(-(4*a*c - b^2)^3)^{(1/2)} + 4*a*b^3*c*(-(4*a*c - b^2)^3)^{(1/2)})/ \\
& (2*(16*a^2*c^8 + b^4*c^6 - 8*a*b^2*c^7))^{(1/2)}*(32*a*c^16 - 64*a^2*c^15 - \\
& 128*a^3*c^14 + 64*a^4*c^13 + 96*a^5*c^12 - 8*b^2*c^15 + 24*b^3*c^14 - 32*b^ \\
& 4*c^13 + 32*b^5*c^12 - 24*b^6*c^11 + 8*b^7*c^10 + 144*a*b^2*c^14 - 200*a*b^ \\
& 3*c^13 + 184*a*b^4*c^12 - 56*a*b^5*c^11 - 8*a*b^6*c^10 + 288*a^2*b*c^14 + 3 \\
& 52*a^3*b*c^13 - 32*a^4*b*c^12 - 320*a^2*b^2*c^13 + 8*a^2*b^3*c^12 + 96*a^2*
\end{aligned}$$



$$\begin{aligned}
&^2 - 38a^3b^2c^3 + 3b^3c^2*(-(4ac - b^2)^3)^{(1/2)} - 10ab^6c - 3a \\
&^2b^2c^2*(-(4ac - b^2)^3)^{(1/2)} - 6ab^3c^3*(-(4ac - b^2)^3)^{(1/2)} + 4a \\
&ab^3c*(-(4ac - b^2)^3)^{(1/2)}/(2*(16a^2c^8 + b^4c^6 - 8ab^2c^7))) \\
&^{(1/2)} + (2048*\tan(x/2)*(20ab^{12} + 42a^2c^{12} - 58b^2c^{12} + 4b^{12}c - 4b \\
&^{13} + 22c^{13} - 40a^2b^{11} + 40a^3b^{10} - 20a^4b^9 + 4a^5b^8 - 214a^ \\
&2c^{11} - 938a^3c^{10} - 1538a^4c^9 - 1278a^5c^8 - 498a^6c^7 - 14a^7c \\
&^6 + 52a^8c^5 + 12a^9c^4 + 14b^2c^{11} + 34b^3c^{10} + 59b^4c^9 - 39 \\
&*b^5c^8 - 160b^6c^7 + 112b^7c^6 + 105b^8c^5 - 89b^9c^4 - 28b^{10}c \\
&^3 + 28b^{11}c^2 - 518ab^2c^{10} - 264ab^3c^9 + 1339ab^4c^8 - 92ab \\
&^5c^7 - 1312ab^6c^6 + 268ab^7c^5 + 649ab^8c^4 - 124ab^9c^3 - 1 \\
&80ab^{10}c^2 + 1550a^2b^2c^{10} - 160a^2b^{10}c + 3488a^3b^2c^9 + 320a^3 \\
&b^9c + 3350a^4b^2c^8 - 300a^4b^8c + 1092a^5b^2c^7 + 136a^5b^7c - \\
&462a^6b^2c^6 - 24a^6b^6c - 440a^7b^2c^5 - 92a^8b^2c^4 - 1568a^2b^2* \\
&c^9 - 2708a^2b^3c^8 + 3564a^2b^4c^7 + 1964a^2b^5c^6 - 2790a^2b^6 \\
&*c^5 - 922a^2b^7c^4 + 1048a^2b^8c^3 + 276a^2b^9c^2 - 652a^3b^2c \\
&^8 - 6280a^3b^3c^7 + 2020a^3b^4c^6 + 4988a^3b^5c^5 - 1118a^3b^6c \\
&^4 - 2008a^3b^7c^3 + 140a^3b^8c^2 + 2350a^4b^2c^7 - 5630a^4b^3c \\
&^6 - 2295a^4b^4c^5 + 3563a^4b^5c^4 + 1260a^4b^6c^3 - 740a^4b^7c \\
&^2 + 3314a^5b^2c^6 - 1456a^5b^3c^5 - 2771a^5b^4c^4 + 308a^5b^5c \\
&^3 + 732a^5b^6c^2 + 1572a^6b^2c^5 + 576a^6b^3c^4 - 696a^6b^4c^ \\
&3 - 300a^6b^5c^2 + 192a^7b^2c^4 + 272a^7b^3c^3 + 44a^7b^4c^2 - \\
&32a^8b^2c^3 + 148ab^2c^{11} + 24ab^{11}c)/c^8)*(-(8a^7c^7 + b^8 + 24a^ \\
&2c^6 + 24a^3c^5 + 8a^4c^4 - b^5*(-(4ac - b^2)^3)^{(1/2)} - 2b^2c^6 + \\
&3b^4c^4 - 3b^6c^2 - 18ab^2c^5 + 24ab^4c^3 - 3b^2c^4*(-(4ac - b \\
&^2)^3)^{(1/2)} - 54a^2b^2c^4 + 33a^2b^4c^2 - 38a^3b^2c^3 + 3b^3c^2 \\
&*(-(4ac - b^2)^3)^{(1/2)} - 10ab^6c - 3a^2b^2c^2*(-(4ac - b^2)^3)^{(1/ \\
&2)} - 6ab^3c^3*(-(4ac - b^2)^3)^{(1/2)} + 4ab^3c*(-(4ac - b^2)^3)^{(1/2 \\
&)))/(2*(16a^2c^8 + b^4c^6 - 8ab^2c^7)))^{(1/2)}*i)/((4096*(16ab^{11} + \\
&274a^2c^{11} - 78b^2c^{11} + 4b^{11}c - 4b^{12} + 33c^{12} - 16a^2b^{10} - 16a^3 \\
&b^9 + 40a^4b^8 - 16a^5b^7 - 16a^6b^6 + 16a^7b^5 - 4a^8b^4 + 1008 \\
&a^2c^{10} + 2156a^3c^9 + 2954a^4c^8 + 2688a^5c^7 + 1624a^6c^6 + 628 \\
&a^7c^5 + 141a^8c^4 + 14a^9c^3 - 64b^2c^{10} + 268b^3c^9 - 26b^4c^ \\
&8 - 348b^5c^7 + 144b^6c^6 + 208b^7c^5 - 123b^8c^4 - 54b^9c^3 + 40 \\
&b^{10}c^2 - 520ab^2c^9 + 1516ab^3c^8 + 144ab^4c^7 - 1564ab^5c^6 \\
&+ 228ab^6c^5 + 740ab^7c^4 - 146ab^8c^3 - 164ab^9c^2 - 1624a^2 \\
&b^2c^9 - 112a^2b^9c - 2676a^3b^2c^8 + 128a^3b^8c - 2588a^4b^2c^7 + \\
&56a^4b^7c - 1388a^5b^2c^6 - 184a^5b^6c - 264a^6b^2c^5 + 80a^6b^5c \\
&+ 116a^7b^2c^4 + 32a^7b^4c + 74a^8b^2c^3 - 28a^8b^3c + 12a^9b^2c \\
&^2 + 4a^9b^2c - 1820a^2b^2c^8 + 3576a^2b^3c^7 + 1032a^2b^4c^6 - \\
&2792a^2b^5c^5 - 236a^2b^6c^4 + 920a^2b^7c^3 + 64a^2b^8c^2 - 35 \\
&84a^3b^2c^7 + 4472a^3b^3c^6 + 2236a^3b^4c^5 - 2436a^3b^5c^4 - 7 \\
&44a^3b^6c^3 + 464a^3b^7c^2 - 4336a^4b^2c^6 + 3040a^4b^3c^5 + 23 \\
&90a^4b^4c^4 - 964a^4b^5c^3 - 592a^4b^6c^2 - 3284a^5b^2c^5 + 908 \\
&a^5b^3c^4 + 1364a^5b^4c^3 - 40a^5b^5c^2 - 1500a^6b^2c^4 - 104a \\
&^6b^3c^3 + 384a^6b^4c^2 - 360a^7b^2c^3 - 144a^7b^3c^2 - 24a^8b
\end{aligned}$$



$$\begin{aligned}
& ^2c^2 - 544*ab^9c^{10} + 20*a^2*b^{10}*c)/c^8 + (((((2048*(48*a^2*c^{15} + 272*a^2*c^{14} + 576*a^3*c^{13} + 576*a^4*c^{12} + 272*a^5*c^{11} + 48*a^6*c^{10} - 12*b^2*c^{14} + 20*b^3*c^{13} + 18*b^4*c^{12} - 46*b^5*c^{11} + 6*b^6*c^{10} + 26*b^7*c^9 - 12*b^8*c^8 - 140*a*b^2*c^{13} + 288*a*b^3*c^{12} + 30*a*b^4*c^{11} - 240*a*b^5*c^{10} + 74*a*b^6*c^9 + 20*a*b^7*c^8 - 416*a^2*b*c^{13} - 736*a^3*b*c^{12} - 544*a^4*b*c^{11} - 144*a^5*b*c^{10} - 360*a^2*b^2*c^{12} + 728*a^2*b^3*c^{11} - 50*a^2*b^4*c^{10} - 182*a^2*b^5*c^9 + 4*a^2*b^6*c^8 - 360*a^3*b^2*c^{11} + 544*a^3*b^3*c^{10} + 10*a^3*b^4*c^9 - 20*a^3*b^5*c^8 - 172*a^4*b^2*c^{10} + 116*a^4*b^3*c^9 + 8*a^4*b^4*c^8 - 44*a^5*b^2*c^9 - 80*a*b*c^{14}))/c^8 - (2048*\tan(x/2)*(-(8*a*c^7 + b^8 + 24*a^2*c^6 + 24*a^3*c^5 + 8*a^4*c^4 - b^5*(-(4*a*c - b^2)^3)^{(1/2)} - 2*b^2*c^6 + 3*b^4*c^4 - 3*b^6*c^2 - 18*a*b^2*c^5 + 24*a*b^4*c^3 - 3*b*c^4*(-(4*a*c - b^2)^3)^{(1/2)} - 54*a^2*b^2*c^4 + 33*a^2*b^4*c^2 - 38*a^3*b^2*c^3 + 3*b^3*c^2*(-(4*a*c - b^2)^3)^{(1/2)} - 10*a*b^6*c - 3*a^2*b*c^2*(-(4*a*c - b^2)^3)^{(1/2)} - 6*a*b*c^3*(-(4*a*c - b^2)^3)^{(1/2)} + 4*a*b^3*c*(-(4*a*c - b^2)^3)^{(1/2)))/(2*(16*a^2*c^8 + b^4*c^6 - 8*a*b^2*c^7)))^{(1/2)}*(32*a*c^{16} - 64*a^2*c^{15} - 128*a^3*c^{14} + 64*a^4*c^{13} + 96*a^5*c^{12} - 8*b^2*c^{15} + 24*b^3*c^{14} - 32*b^4*c^{13} + 32*b^5*c^{12} - 24*b^6*c^{11} + 8*b^7*c^{10} + 144*a*b^2*c^{14} - 200*a*b^3*c^{13} + 184*a*b^4*c^{12} - 56*a*b^5*c^{11} - 8*a*b^6*c^{10} + 288*a^2*b*c^{14} + 352*a^3*b*c^{13} - 32*a^4*b*c^{12} - 320*a^2*b^2*c^{13} + 8*a^2*b^3*c^{12} + 96*a^2*b^4*c^{11} - 8*a^2*b^5*c^{10} - 272*a^3*b^2*c^{12} + 40*a^3*b^3*c^{11} + 8*a^3*b^4*c^{10} - 56*a^4*b^2*c^{11} - 96*a*b*c^{15}))/c^8)*(-(8*a*c^7 + b^8 + 24*a^2*c^6 + 24*a^3*c^5 + 8*a^4*c^4 - b^5*(-(4*a*c - b^2)^3)^{(1/2)} - 2*b^2*c^6 + 3*b^4*c^4 - 3*b^6*c^2 - 18*a*b^2*c^5 + 24*a*b^4*c^3 - 3*b*c^4*(-(4*a*c - b^2)^3)^{(1/2)} - 54*a^2*b^2*c^4 + 33*a^2*b^4*c^2 - 38*a^3*b^2*c^3 + 3*b^3*c^2*(-(4*a*c - b^2)^3)^{(1/2)} - 10*a*b^6*c - 3*a^2*b*c^2*(-(4*a*c - b^2)^3)^{(1/2)} - 6*a*b*c^3*(-(4*a*c - b^2)^3)^{(1/2)} + 4*a*b^3*c*(-(4*a*c - b^2)^3)^{(1/2)))/(2*(16*a^2*c^8 + b^4*c^6 - 8*a*b^2*c^7)))^{(1/2)} + (2048*\tan(x/2)*(24*b*c^{14} - 96*a*c^{14} - 8*c^{15} + 152*a^2*c^{13} + 952*a^3*c^{12} + 1096*a^4*c^{11} + 304*a^5*c^{10} - 152*a^6*c^9 - 72*a^7*c^8 + 2*b^2*c^{13} - 38*b^3*c^{12} - 7*b^4*c^{11} + 39*b^5*c^{10} - 15*b^6*c^9 + 35*b^7*c^8 - 44*b^8*c^7 - 4*b^9*c^6 + 24*b^{10}*c^5 - 8*b^{11}*c^4 + 68*a*b^2*c^{12} + 42*a*b^3*c^{11} - 159*a*b^4*c^{10} - 400*a*b^5*c^9 + 537*a*b^6*c^8 + 68*a*b^7*c^7 - 276*a*b^8*c^6 + 72*a*b^9*c^5 + 8*a*b^{10}*c^4 - 944*a^2*b*c^{12} - 2520*a^3*b*c^{11} - 1824*a^4*b*c^{10} - 272*a^5*b*c^9 + 88*a^6*b*c^8 + 584*a^2*b^2*c^{11} + 1742*a^2*b^3*c^{10} - 1645*a^2*b^4*c^9 - 795*a^2*b^5*c^8 + 1132*a^2*b^6*c^7 - 112*a^2*b^7*c^6 - 12*a^2*b^8*c^5 + 8*a^2*b^9*c^4 + 476*a^3*b^2*c^{10} + 2766*a^3*b^3*c^9 - 1705*a^3*b^4*c^8 - 396*a^3*b^5*c^7 + 456*a^3*b^6*c^6 - 56*a^3*b^7*c^5 - 8*a^3*b^8*c^4 + 230*a^4*b^2*c^9 + 880*a^4*b^3*c^8 - 656*a^4*b^4*c^7 + 140*a^4*b^5*c^6 + 72*a^4*b^6*c^5 + 464*a^5*b^2*c^8 - 192*a^5*b^3*c^7 - 220*a^5*b^4*c^6 + 256*a^6*b^2*c^7 + 136*a*b*c^{13}))/c^8)*(-(8*a*c^7 + b^8 + 24*a^2*c^6 + 24*a^3*c^5 + 8*a^4*c^4 - b^5*(-(4*a*c - b^2)^3)^{(1/2)} - 2*b^2*c^6 + 3*b^4*c^4 - 3*b^6*c^2 - 18*a*b^2*c^5 + 24*a*b^4*c^3 - 3*b*c^4*(-(4*a*c - b^2)^3)^{(1/2)} - 54*a^2*b^2*c^4 + 33*a^2*b^4*c^2 - 38*a^3*b^2*c^3 + 3*b^3*c^2*(-(4*a*c - b^2)^3)^{(1/2)} - 10*a*b^6*c - 3*a^2*b*c^2*(-(4*a*c - b^2)^3)^{(1/2)} - 6*a*b*c^3*(-(4*a*c - b^2)^3)^{(1/2)} + 4*a*b^3*c*(-(4*a*c - b^2)^3)^{(1/2)))/(2*(16*a
\end{aligned}$$

$$\begin{aligned}
& ^2c^8 + b^4c^6 - 8a^2b^2c^7)))^{(1/2)} + (2048*(236a^3c^{13} - 32b^2c^{13} + 1 \\
& 2c^{14} + 1084a^2c^{12} + 2328a^3c^{11} + 2784a^4c^{10} + 1948a^5c^9 + 780 \\
& a^6c^8 + 160a^7c^7 + 12a^8c^6 - 39b^2c^{12} + 121b^3c^{11} + 61b^4c \\
& ^{10} - 220b^5c^9 - 36b^6c^8 + 232b^7c^7 - 28b^8c^6 - 127b^9c^5 + 4 \\
& 2b^{10}c^4 + 26b^{11}c^3 - 12b^{12}c^2 - 635a^2b^2c^{11} + 1300a^2b^3c^{10} + \\
& 608a^2b^4c^9 - 1792a^2b^5c^8 - 60a^2b^6c^7 + 1218a^2b^7c^6 - 249a^2b^8 \\
& c^5 - 340a^2b^9c^4 + 98a^2b^{10}c^3 + 20a^2b^{11}c^2 - 1616a^2b^{12}c - 31 \\
& 60a^3b^2c^{10} - 3440a^3b^3c^9 - 2132a^3b^4c^8 - 704a^3b^5c^7 - 96a^3b^6c^6 \\
& - 2242a^3b^7c^5 + 4146a^3b^8c^4 + 1420a^3b^9c^3 - 4158a^3b^{10}c^2 + 77a^3b^{11}c \\
& - 222a^3b^{12} - 4a^4b^2c^9 + 3714a^4b^3c^8 + 6252a^4b^4c^7 + 1730a^4b^5c^6 \\
& - 4300a^4b^6c^5 - 79a^4b^7c^4 + 968a^4b^8c^3 + 2a^4b^9c^2 - 2031a^4b^{10}c \\
& - 3523a^4b^{11} + 5025a^4b^{12} + 1339a^5b^2c^8 - 20 \\
& 82a^5b^3c^7 - 192a^5b^4c^6 + 156a^5b^5c^5 + 8a^5b^6c^4 - 2031a^5b^7c^3 \\
& + 2104a^5b^8c^2 + 634a^5b^9c - 388a^5b^{10} - 60a^5b^{11} - 676a^6b^2c^7 \\
& + 364a^6b^3c^6 + 136a^6b^4c^5 - 100a^6b^5c^4 - 404a^6b^6c^3 - 404a^6b^7c^2 \\
& - 404a^6b^8c - 404a^6b^9 - 404a^6b^{10} - 404a^6b^{11} - 404a^6b^{12}))/c^8)*(- \\
& (8a^2c^7 + b^8 + 24a^2c^6 + 24a^3c^5 + 8a^4c^4 - b^5*(-(4a^2c - b^2)^3)^{(1/2)} - \\
& 2b^2c^6 + 3b^4c^4 - 3b^6c^2 - 18a^2b^2c^5 + 24a^2b^4c^3 - 3b^2c^4*(-(4a^2c - b^2)^3)^{(1/2)} - \\
& 54a^2b^2c^4 + 33a^2b^4c^2 - 38a^3b^2c^3 + 3b^3c^2*(-(4a^2c - b^2)^3)^{(1/2)} \\
& ) - 10a^2b^6c - 3a^2b^8c^2*(-(4a^2c - b^2)^3)^{(1/2)} - 6a^2b^8c^3*(-(4a^2c \\
& - b^2)^3)^{(1/2)} + 4a^2b^3c*(-(4a^2c - b^2)^3)^{(1/2)))/(2*(16a^2c^8 + b^4c^6 \\
& - 8a^2b^2c^7)))^{(1/2)} - (2048*\tan(x/2)*(20a^2b^{12} + 42a^2c^{12} - 58b^2c^{12} \\
& + 4b^{12}c - 4b^{13} + 22c^{13} - 40a^2b^{11} + 40a^3b^{10} - 20a^4b^9 \\
& + 4a^5b^8 - 214a^2c^{11} - 938a^3c^{10} - 1538a^4c^9 - 1278a^5c^8 - 4 \\
& 98a^6c^7 - 14a^7c^6 + 52a^8c^5 + 12a^9c^4 + 14b^2c^{11} + 34b^3c^{10} \\
& + 59b^4c^9 - 39b^5c^8 - 160b^6c^7 + 112b^7c^6 + 105b^8c^5 - 89 \\
& b^9c^4 - 28b^{10}c^3 + 28b^{11}c^2 - 518a^2b^2c^{10} - 264a^2b^3c^9 + 133 \\
& 9a^2b^4c^8 - 92a^2b^5c^7 - 1312a^2b^6c^6 + 268a^2b^7c^5 + 649a^2b^8c^4 \\
& - 124a^2b^9c^3 - 180a^2b^{10}c^2 + 1550a^2b^{11}c - 160a^2b^{12} + 3488 \\
& a^3b^2c^9 + 320a^3b^3c^8 + 3350a^3b^4c^7 - 300a^3b^5c^6 + 1092a^3b^6c^5 \\
& + 136a^3b^7c^4 - 462a^3b^8c^3 - 24a^3b^9c^2 - 440a^3b^{10}c - 92a^3b^{11} \\
& c - 1568a^2b^2c^9 - 2708a^2b^3c^8 + 3564a^2b^4c^7 + 1964a^2b^5c^6 - 2790a^2b^6c^5 \\
& - 922a^2b^7c^4 + 1048a^2b^8c^3 + 276a^2b^9c^2 - 652a^3b^2c^8 - 6280a^3b^3c^7 \\
& + 2020a^3b^4c^6 + 4988a^3b^5c^5 - 1118a^3b^6c^4 - 2008a^3b^7c^3 + 140a^3b^8c^2 \\
& + 2350a^3b^9c - 5630a^4b^3c^6 - 2295a^4b^4c^5 + 3563a^4b^5c^4 + 1260a^4b^6c^3 \\
& - 740a^4b^7c^2 + 3314a^4b^8c - 1456a^5b^3c^5 - 2771a^5b^4c^4 + 308a^5b^5c^3 \\
& + 732a^5b^6c^2 + 1572a^5b^7c - 576a^6b^2c^5 + 576a^6b^3c^4 - 696a^6b^4c^3 \\
& - 300a^6b^5c^2 + 192a^7b^2c^4 + 272a^7b^3c^3 + 44a^7b^4c^2 - 32a^8b^2c^3 \\
& + 148a^8b^3c^2 + 24a^8b^4c - 24a^8b^5)))/c^8)*(- \\
& (8a^2c^7 + b^8 + 24a^2c^6 + 24a^3c^5 + 8a^4c^4 - b^5*(-(4a^2c - b^2)^3)^{(1/2)} - \\
& 2b^2c^6 + 3b^4c^4 - 3b^6c^2 - 18a^2b^2c^5 + 24a^2b^4c^3 - 3b^2c^4*(-(4a^2c - b^2)^3)^{(1/2)} - \\
& 54a^2b^2c^4 + 33a^2b^4c^2 - 38a^3b^2c^3 + 3b^3c^2*(-(4a^2c - b^2)^3)^{(1/2)} - 10a^2b^6c - 3a^2b^8c^2*(-
\end{aligned}$$

$$\begin{aligned}
& (4ac - b^2)^3)^{1/2} - 6abc^3(-4ac - b^2)^3)^{1/2} + 4ab^3c(-4ac - \\
& (4ac - b^2)^3)^{1/2}) / (2(16a^2c^8 + b^4c^6 - 8ab^2c^7))^{1/2} + (( \\
& ((2048(48a^{15}c^{15} + 272a^{14}c^{14} + 576a^{13}c^{13} + 576a^{14}c^{12} + 272a^{15}c^{11} + \\
& 48a^{16}c^{10} - 12b^2c^{14} + 20b^3c^{13} + 18b^4c^{12} - 46b^5c^{11} + \\
& 6b^6c^{10} + 26b^7c^9 - 12b^8c^8 - 140ab^2c^{13} + 288ab^3c^{12} + 3 \\
& 0ab^4c^{11} - 240ab^5c^{10} + 74ab^6c^9 + 20ab^7c^8 - 416a^2b^2c^1 \\
& 3 - 736a^3b^2c^{12} - 544a^4b^2c^{11} - 144a^5b^2c^{10} - 360a^2b^2c^{12} + 7 \\
& 28a^2b^3c^{11} - 50a^2b^4c^{10} - 182a^2b^5c^9 + 4a^2b^6c^8 - 360a \\
& ^3b^2c^{11} + 544a^3b^3c^{10} + 10a^3b^4c^9 - 20a^3b^5c^8 - 172a^4b \\
& ^2c^{10} + 116a^4b^3c^9 + 8a^4b^4c^8 - 44a^5b^2c^9 - 80ab^2c^{14})) \\
& /c^8 + (2048\tan(x/2)*(-(8a^7c^7 + b^8 + 24a^2c^6 + 24a^3c^5 + 8a^4c^4 \\
& - b^5*(-4ac - b^2)^3)^{1/2} - 2b^2c^6 + 3b^4c^4 - 3b^6c^2 - 18ab^2 \\
& c^5 + 24ab^4c^3 - 3b^2c^4*(-4ac - b^2)^3)^{1/2} - 54a^2b^2c^4 \\
& + 33a^2b^4c^2 - 38a^3b^2c^3 + 3b^3c^2*(-4ac - b^2)^3)^{1/2} - 1 \\
& 0ab^6c - 3a^2b^2c^2*(-4ac - b^2)^3)^{1/2} - 6abc^3(-4ac - b^2 \\
& )^3)^{1/2} + 4ab^3c(-4ac - b^2)^3)^{1/2}) / (2(16a^2c^8 + b^4c^6 - \\
& 8ab^2c^7))^{1/2} * (32a^{16}c^{16} - 64a^{15}c^{15} - 128a^{14}c^{14} + 64a^{14}c^{13} \\
& + 96a^{15}c^{12} - 8b^2c^{15} + 24b^3c^{14} - 32b^4c^{13} + 32b^5c^{12} - 24b \\
& ^6c^{11} + 8b^7c^{10} + 144ab^2c^{14} - 200ab^3c^{13} + 184ab^4c^{12} - \\
& 56ab^5c^{11} - 8ab^6c^{10} + 288a^2b^2c^{14} + 352a^3b^2c^{13} - 32a^4b^2c^{12} \\
& - 320a^2b^2c^{13} + 8a^2b^3c^{12} + 96a^2b^4c^{11} - 8a^2b^5c^{10} \\
& - 272a^3b^2c^{12} + 40a^3b^3c^{11} + 8a^3b^4c^{10} - 56a^4b^2c^{11} - 9 \\
& 6abc^15) / c^8 * (-(8a^7c^7 + b^8 + 24a^2c^6 + 24a^3c^5 + 8a^4c^4 - \\
& b^5*(-4ac - b^2)^3)^{1/2} - 2b^2c^6 + 3b^4c^4 - 3b^6c^2 - 18ab^2 \\
& c^5 + 24ab^4c^3 - 3b^2c^4*(-4ac - b^2)^3)^{1/2} - 54a^2b^2c^4 + 3 \\
& 3a^2b^4c^2 - 38a^3b^2c^3 + 3b^3c^2*(-4ac - b^2)^3)^{1/2} - 10ab^6c \\
& - 3a^2b^2c^2*(-4ac - b^2)^3)^{1/2} - 6abc^3(-4ac - b^2)^3)^{1/2} \\
& + 4ab^3c(-4ac - b^2)^3)^{1/2}) / (2(16a^2c^8 + b^4c^6 - 8ab^2c^7))^{1/2} - \\
& (2048\tan(x/2)*(24b^4c^{14} - 96a^4c^{14} - 8c^{15} + 152a^2c^{13} + \\
& 952a^3c^{12} + 1096a^4c^{11} + 304a^5c^{10} - 152a^6c^9 - 72a^7 \\
& c^8 + 2b^2c^{13} - 38b^3c^{12} - 7b^4c^{11} + 39b^5c^{10} - 15b^6c^9 + 3 \\
& 5b^7c^8 - 44b^8c^7 - 4b^9c^6 + 24b^{10}c^5 - 8b^{11}c^4 + 68ab^2c^1 \\
& 2 + 42ab^3c^{11} - 159ab^4c^{10} - 400ab^5c^9 + 537ab^6c^8 + 68ab^7c^7 - \\
& 276ab^8c^6 + 72ab^9c^5 + 8ab^{10}c^4 - 944a^2b^2c^{12} - 25 \\
& 20a^3b^2c^{11} - 1824a^4b^2c^{10} - 272a^5b^2c^9 + 88a^6b^2c^8 + 584a^2b^2 \\
& c^{11} + 1742a^2b^3c^{10} - 1645a^2b^4c^9 - 795a^2b^5c^8 + 1132a^2b^6c^7 - \\
& 112a^2b^7c^6 - 112a^2b^8c^5 + 8a^2b^9c^4 + 476a^3b^2c^{10} + 2766a^3b^3c^9 - \\
& 1705a^3b^4c^8 - 396a^3b^5c^7 + 456a^3b^6c^6 - 56a^3b^7c^5 - 8a^3b^8c^4 + \\
& 230a^4b^2c^9 + 880a^4b^3c^8 - 6 \\
& 56a^4b^4c^7 + 140a^4b^5c^6 + 72a^4b^6c^5 + 464a^5b^2c^8 - 192a^5b^3c^7 - \\
& 220a^5b^4c^6 + 256a^6b^2c^7 + 136abc^{13}) / c^8 * (-(8a^7c^7 + b^8 + \\
& 24a^2c^6 + 24a^3c^5 + 8a^4c^4 - b^5*(-4ac - b^2)^3)^{1/2} - 2b^2c^6 + \\
& 3b^4c^4 - 3b^6c^2 - 18ab^2c^5 + 24ab^4c^3 - 3b^2c^4*(-4ac - b^2)^3)^{1/2} - \\
& 54a^2b^2c^4 + 33a^2b^4c^2 - 38a^3b^2c^3 + 3b^3c^2*(-4ac - b^2)^3)^{1/2} - \\
& 10ab^6c - 3a^2b^2c^2*(-4
\end{aligned}$$

$$\begin{aligned}
& *a*c - b^2)^3)^{(1/2)} - 6*a*b*c^3*(-(4*a*c - b^2)^3)^{(1/2)} + 4*a*b^3*c*(-(4*a*c - b^2)^3)^{(1/2)})/(2*(16*a^2*c^8 + b^4*c^6 - 8*a*b^2*c^7))^{(1/2)} + (204 \\
& 8*(236*a*c^{13} - 32*b*c^{13} + 12*c^{14} + 1084*a^2*c^{12} + 2328*a^3*c^{11} + 2784* \\
& a^4*c^{10} + 1948*a^5*c^9 + 780*a^6*c^8 + 160*a^7*c^7 + 12*a^8*c^6 - 39*b^2*c \\
& ^{12} + 121*b^3*c^{11} + 61*b^4*c^{10} - 220*b^5*c^9 - 36*b^6*c^8 + 232*b^7*c^7 - \\
& 28*b^8*c^6 - 127*b^9*c^5 + 42*b^{10}*c^4 + 26*b^{11}*c^3 - 12*b^{12}*c^2 - 635*a \\
& *b^2*c^{11} + 1300*a*b^3*c^{10} + 608*a*b^4*c^9 - 1792*a*b^5*c^8 - 60*a*b^6*c^7 \\
& + 1218*a*b^7*c^6 - 249*a*b^8*c^5 - 340*a*b^9*c^4 + 98*a*b^{10}*c^3 + 20*a*b^{11}*c^2 - 1616*a^2*b*c^{11} - 3160*a^3*b*c^{10} - 3440*a^4*b*c^9 - 2132*a^5*b*c^8 \\
& - 704*a^6*b*c^7 - 96*a^7*b*c^6 - 2242*a^2*b^2*c^{10} + 4146*a^2*b^3*c^9 + 1 \\
& 420*a^2*b^4*c^8 - 4158*a^2*b^5*c^7 + 77*a^2*b^6*c^6 + 1735*a^2*b^7*c^5 - 23 \\
& 4*a^2*b^8*c^4 - 222*a^2*b^9*c^3 + 4*a^2*b^{10}*c^2 - 3714*a^3*b^2*c^9 + 6252* \\
& a^3*b^3*c^8 + 1730*a^3*b^4*c^7 - 4300*a^3*b^5*c^6 - 79*a^3*b^6*c^5 + 968*a^3*b^7*c^4 + 2*a^3*b^8*c^3 - 20*a^3*b^9*c^2 - 3523*a^4*b^2*c^8 + 5025*a^4*b^3*c^7 + 1339*a^4*b^4*c^6 - 2082*a^4*b^5*c^5 - 192*a^4*b^6*c^4 + 156*a^4*b^7*c^3 + 8*a^4*b^8*c^2 - 2031*a^5*b^2*c^7 + 2104*a^5*b^3*c^6 + 634*a^5*b^4*c^5 - 388*a^5*b^5*c^4 - 60*a^5*b^6*c^3 - 676*a^6*b^2*c^6 + 364*a^6*b^3*c^5 + 136*a^6*b^4*c^4 - 100*a^7*b^2*c^5 - 404*a*b*c^{12}))/c^8)*(-(8*a*c^7 + b^8 + 24*a^2*c^6 + 24*a^3*c^5 + 8*a^4*c^4 - b^5*(-(4*a*c - b^2)^3)^{(1/2)} - 2*b^2*c^6 + 3*b^4*c^4 - 3*b^6*c^2 - 18*a*b^2*c^5 + 24*a*b^4*c^3 - 3*b*c^4*(-(4*a*c - b^2)^3)^{(1/2)} - 54*a^2*b^2*c^4 + 33*a^2*b^4*c^2 - 38*a^3*b^2*c^3 + 3*b^3*c^2*(-(4*a*c - b^2)^3)^{(1/2)} - 10*a*b^6*c - 3*a^2*b*c^2*(-(4*a*c - b^2)^3)^{(1/2)} - 6*a*b*c^3*(-(4*a*c - b^2)^3)^{(1/2)} + 4*a*b^3*c*(-(4*a*c - b^2)^3)^{(1/2)})/(2*(16*a^2*c^8 + b^4*c^6 - 8*a*b^2*c^7))^{(1/2)} + (2048*tan(x/2)*(20*a*b^{12} + 42*a*c^{12} - 58*b*c^{12} + 4*b^{12}*c - 4*b^{13} + 22*c^{13} - 40*a^2*b^{11} + 40*a^3*b^{10} - 20*a^4*b^9 + 4*a^5*b^8 - 214*a^2*c^{11} - 938*a^3*c^{10} - 1538*a^4*c^9 - 1278*a^5*c^8 - 498*a^6*c^7 - 14*a^7*c^6 + 52*a^8*c^5 + 12*a^9*c^4 + 14*b^2*c^{11} + 34*b^3*c^{10} + 59*b^4*c^9 - 39*b^5*c^8 - 160*b^6*c^7 + 112*b^7*c^6 + 105*b^8*c^5 - 89*b^9*c^4 - 28*b^{10}*c^3 + 28*b^{11}*c^2 - 518*a*b^2*c^{10} - 264*a*b^3*c^9 + 1339*a*b^4*c^8 - 92*a*b^5*c^7 - 1312*a*b^6*c^6 + 268*a*b^7*c^5 + 649*a*b^8*c^4 - 124*a*b^9*c^3 - 180*a*b^{10}*c^2 + 1550*a^2*b*c^{10} - 160*a^2*b^{10}*c + 3488*a^3*b*c^9 + 320*a^3*b^9*c + 3350*a^4*b*c^8 - 300*a^4*b^8*c + 1092*a^5*b*c^7 + 136*a^5*b^7*c - 462*a^6*b*c^6 - 24*a^6*b^6*c - 440*a^7*b*c^5 - 92*a^8*b*c^4 - 1568*a^2*b^2*c^9 - 2708*a^2*b^3*c^8 + 3564*a^2*b^4*c^7 + 1964*a^2*b^5*c^6 - 2790*a^2*b^6*c^5 - 922*a^2*b^7*c^4 + 1048*a^2*b^8*c^3 + 276*a^2*b^9*c^2 - 652*a^3*b^2*c^8 - 6280*a^3*b^3*c^7 + 2020*a^3*b^4*c^6 + 4988*a^3*b^5*c^5 - 1118*a^3*b^6*c^4 - 2008*a^3*b^7*c^3 + 140*a^3*b^8*c^2 + 2350*a^4*b^2*c^7 - 5630*a^4*b^3*c^6 - 2295*a^4*b^4*c^5 + 3563*a^4*b^5*c^4 + 1260*a^4*b^6*c^3 - 740*a^4*b^7*c^2 + 3314*a^5*b^2*c^6 - 1456*a^5*b^3*c^5 - 2771*a^5*b^4*c^4 + 308*a^5*b^5*c^3 + 732*a^5*b^6*c^2 + 1572*a^6*b^2*c^5 + 576*a^6*b^3*c^4 - 696*a^6*b^4*c^3 - 300*a^6*b^5*c^2 + 192*a^7*b^2*c^4 + 272*a^7*b^3*c^3 + 44*a^7*b^4*c^2 - 32*a^8*b^2*c^3 + 148*a*b*c^{11} + 24*a*b^{11}*c))/c^8)*(-(8*a*c^7 + b^8 + 24*a^2*c^6 + 24*a^3*c^5 + 8*a^4*c^4 - b^5*(-(4*a*c - b^2)^3)^{(1/2)} - 2*b^2*c^6 + 3*b^4*c^4 - 3*b^6*c^2 - 18*a*b^2*c^5 + 24*a*b^4*c^3 - 3*b*c^4*(-(4*a*c - b^2)^3)^{(1/2)} - 54*a^2*b^2*
\end{aligned}$$

$$\begin{aligned}
& c^4 + 33a^2b^4c^2 - 38a^3b^2c^3 + 3b^3c^2(-4ac - b^2)^3)^{(1/2)} \\
& - 10ab^6c - 3a^2b^2c^2(-4ac - b^2)^3)^{(1/2)} - 6ab^3c^3(-4ac - \\
& b^2)^3)^{(1/2)} + 4ab^3c^3(-4ac - b^2)^3)^{(1/2)} / (2(16a^2c^8 + b^4c^6 \\
& - 8ab^2c^7))^{(1/2)})) * (-8ac^7 + b^8 + 24a^2c^6 + 24a^3c^5 + 8a \\
& ^4c^4 - b^5(-4ac - b^2)^3)^{(1/2)} - 2b^2c^6 + 3b^4c^4 - 3b^6c^2 - \\
& 18ab^2c^5 + 24ab^4c^3 - 3b^2c^4(-4ac - b^2)^3)^{(1/2)} - 54a^2b^2 \\
& c^4 + 33a^2b^4c^2 - 38a^3b^2c^3 + 3b^3c^2(-4ac - b^2)^3)^{(1/2)} \\
& ) - 10ab^6c - 3a^2b^2c^2(-4ac - b^2)^3)^{(1/2)} - 6ab^3c^3(-4ac - \\
& b^2)^3)^{(1/2)} + 4ab^3c^3(-4ac - b^2)^3)^{(1/2)} / (2(16a^2c^8 + b^4c^6 \\
& - 8ab^2c^7))^{(1/2)} * 2i + (\operatorname{atan}(\frac{(((((2048(236ac^{13} - 32b^2c^{13} + \\
& 12c^{14} + 1084a^2c^{12} + 2328a^3c^{11} + 2784a^4c^{10} + 1948a^5c^9 + 78 \\
& 0a^6c^8 + 160a^7c^7 + 12a^8c^6 - 39b^2c^{12} + 121b^3c^{11} + 61b^4c^{10} \\
& - 220b^5c^9 - 36b^6c^8 + 232b^7c^7 - 28b^8c^6 - 127b^9c^5 + \\
& 42b^{10}c^4 + 26b^{11}c^3 - 12b^{12}c^2 - 635ab^2c^{11} + 1300ab^3c^{10} \\
& + 608ab^4c^9 - 1792ab^5c^8 - 60ab^6c^7 + 1218ab^7c^6 - 249ab^8 \\
& c^5 - 340ab^9c^4 + 98ab^{10}c^3 + 20ab^{11}c^2 - 1616a^2b^2c^{11} - 3 \\
& 160a^3b^2c^{10} - 3440a^4b^2c^9 - 2132a^5b^2c^8 - 704a^6b^2c^7 - 96a^7b^2 \\
& c^6 - 2242a^2b^2c^{10} + 4146a^2b^3c^9 + 1420a^2b^4c^8 - 4158a^2b^5 \\
& c^7 + 77a^2b^6c^6 + 1735a^2b^7c^5 - 234a^2b^8c^4 - 222a^2b^9c^3 + 4a^2 \\
& b^{10}c^2 - 3714a^3b^2c^9 + 6252a^3b^3c^8 + 1730a^3b^4c^7 - 4300a^3 \\
& b^5c^6 - 79a^3b^6c^5 + 968a^3b^7c^4 + 2a^3b^8c^3 - 20a^3b^9c^2 - 3523 \\
& a^4b^2c^8 + 5025a^4b^3c^7 + 1339a^4b^4c^6 - 2082a^4b^5c^5 - 192a^4 \\
& b^6c^4 + 156a^4b^7c^3 + 8a^4b^8c^2 - 2031a^5b^2c^7 + 2104a^5b^3c^6 + \\
& 634a^5b^4c^5 - 388a^5b^5c^4 - 60a^5b^6c^3 - 676a^6b^2c^6 + 364a^6b^3 \\
& c^5 + 136a^6b^4c^4 - 100a^7b^2c^5 - 404ab^2c^{12})) / c^8 + (((2048 \tan(x/2) * (24b^2c^{14} - 96a^2c^{14} - 8c^{15} \\
& + 152a^2c^{13} + 952a^3c^{12} + 1096a^4c^{11} + 304a^5c^{10} - 152a^6c^9 \\
& - 72a^7c^8 + 2b^2c^{13} - 38b^3c^{12} - 7b^4c^{11} + 39b^5c^{10} - 15b^6 \\
& c^9 + 35b^7c^8 - 44b^8c^7 - 4b^9c^6 + 24b^{10}c^5 - 8b^{11}c^4 + 68ab^2 \\
& c^{12} + 42ab^3c^{11} - 159ab^4c^{10} - 400ab^5c^9 + 537ab^6c^8 + 68ab^7 \\
& c^7 - 276ab^8c^6 + 72ab^9c^5 + 8ab^{10}c^4 - 944a^2b^2c^{12} - 2520a^3 \\
& b^2c^{11} - 1824a^4b^2c^{10} - 272a^5b^2c^9 + 88a^6b^2c^8 + 584a^2b^2 \\
& c^{11} + 1742a^2b^3c^{10} - 1645a^2b^4c^9 - 795a^2b^5c^8 + 1132a^2b^6 \\
& c^7 - 112a^2b^7c^6 - 112a^2b^8c^5 + 8a^2b^9c^4 + 476a^3b^2c^{10} + 2766 \\
& a^3b^3c^9 - 1705a^3b^4c^8 - 396a^3b^5c^7 + 456a^3b^6c^6 - 56a^3b^7 \\
& c^5 - 8a^3b^8c^4 + 230a^4b^2c^9 + 880a^4b^3c^8 - 656a^4b^4c^7 + 140a^4 \\
& b^5c^6 + 72a^4b^6c^5 + 464a^5b^2c^8 - 192a^5b^3c^7 - 220a^5b^4c^6 + \\
& 256a^6b^2c^7 + 136ab^2c^{13})) / c^8 + (((2048(48a^2c^{15} + 272a^2c^{14} + \\
& 576a^3c^{13} + 576a^4c^{12} + 272a^5c^{11} + 48a^6c^{10} - 12b^2c^{14} + 20b^3 \\
& c^{13} + 18b^4c^{12} - 46b^5c^{11} + 6b^6c^{10} + 26b^7c^9 - 12b^8c^8 - 140ab^2 \\
& c^{13} + 288ab^3c^{12} + 30ab^4c^{11} - 240ab^5c^{10} + 74ab^6c^9 + 20ab^7 \\
& c^8 - 416a^2b^2c^{13} - 736a^3b^2c^{12} - 544a^4b^2c^{11} - 144a^5b^2c^{10} - \\
& 360a^2b^2c^{12} + 728a^2b^3c^{11} - 50a^2b^4c^{10} - 182a^2b^5c^9 + 4a^2 \\
& b^6c^8 - 360a^3b^2c^{11} + 544a^3b^3c^{10} + 10a^3b^4c^9 - 20a^3b^5c^8 - 17
\end{aligned}$$

$$\begin{aligned}
& 2a^4b^2c^{10} + 116a^4b^3c^9 + 8a^4b^4c^8 - 44a^5b^2c^9 - 80a^5b^3c^{14})/c^8 - (2048\tan(x/2)(ac^{1i} - b^{2*1i} + (c^{2*3i})/2)(32a^2c^{16} - 64a^2c^{15} - 128a^3c^{14} + 64a^4c^{13} + 96a^5c^{12} - 8b^2c^{15} + 24b^3c^{14} - 32b^4c^{13} + 32b^5c^{12} - 24b^6c^{11} + 8b^7c^{10} + 144a^2b^2c^{14} - 200a^2b^3c^{13} + 184a^2b^4c^{12} - 56a^2b^5c^{11} - 8a^2b^6c^{10} + 288a^2b^7c^{14} + 352a^3b^2c^{13} - 32a^4b^2c^{12} - 320a^2b^2c^{13} + 8a^2b^3c^{12} + 96a^2b^4c^{11} - 8a^2b^5c^{10} - 272a^3b^2c^{12} + 40a^3b^3c^{11} + 8a^3b^4c^{10} - 56a^4b^2c^{11} - 96a^5b^2c^{15}))/c^{11})(ac^{1i} - b^{2*1i} + (c^{2*3i})/2))/c^3)(ac^{1i} - b^{2*1i} + (c^{2*3i})/2))/c^3 - (2048\tan(x/2)(20a^2b^{12} + 42a^2c^{12} - 58b^2c^{12} + 4b^{12}c - 4b^{13} + 22c^{13} - 40a^2b^{11} + 40a^3b^{10} - 20a^4b^9 + 4a^5b^8 - 214a^2c^{11} - 938a^3c^{10} - 1538a^4c^9 - 1278a^5c^8 - 498a^6c^7 - 14a^7c^6 + 52a^8c^5 + 12a^9c^4 + 14b^2c^{11} + 34b^3c^{10} + 59b^4c^9 - 39b^5c^8 - 160b^6c^7 + 112b^7c^6 + 105b^8c^5 - 89b^9c^4 - 28b^{10}c^3 + 28b^{11}c^2 - 518a^2b^2c^{10} - 264a^2b^3c^9 + 1339a^2b^4c^8 - 92a^2b^5c^7 - 1312a^2b^6c^6 + 268a^2b^7c^5 + 649a^2b^8c^4 - 124a^2b^9c^3 - 180a^2b^{10}c^2 + 1550a^2b^2c^{10} - 160a^2b^{10}c + 3488a^3b^2c^9 + 320a^3b^9c + 3350a^4b^2c^8 - 300a^4b^8c + 1092a^5b^2c^7 + 136a^5b^7c - 462a^6b^2c^6 - 24a^6b^6c - 440a^7b^2c^5 - 92a^8b^2c^4 - 1568a^2b^2c^9 - 2708a^2b^3c^8 + 3564a^2b^4c^7 + 1964a^2b^5c^6 - 2790a^2b^6c^5 - 922a^2b^7c^4 + 1048a^2b^8c^3 + 276a^2b^9c^2 - 652a^3b^2c^8 - 6280a^3b^3c^7 + 2020a^3b^4c^6 + 4988a^3b^5c^5 - 1118a^3b^6c^4 - 2008a^3b^7c^3 + 140a^3b^8c^2 + 2350a^4b^2c^7 - 5630a^4b^3c^6 - 2295a^4b^4c^5 + 3563a^4b^5c^4 + 1260a^4b^6c^3 - 740a^4b^7c^2 + 3314a^5b^2c^6 - 1456a^5b^3c^5 - 2771a^5b^4c^4 + 308a^5b^5c^3 + 732a^5b^6c^2 + 1572a^6b^2c^5 + 576a^6b^3c^4 - 696a^6b^4c^3 - 300a^6b^5c^2 + 192a^7b^2c^4 + 272a^7b^3c^3 + 44a^7b^4c^2 - 32a^8b^2c^3 + 148a^8b^2c^{11} + 24a^8b^{11}c))/c^8)(ac^{1i} - b^{2*1i} + (c^{2*3i})/2)*1i)/c^3 - (((((2048*(236a^2c^{13} - 32b^2c^{13} + 12c^{14} + 1084a^2c^{12} + 2328a^3c^{11} + 2784a^4c^{10} + 1948a^5c^9 + 780a^6c^8 + 160a^7c^7 + 12a^8c^6 - 39b^2c^{12} + 121b^3c^{11} + 61b^4c^{10} - 220b^5c^9 - 36b^6c^8 + 232b^7c^7 - 28b^8c^6 - 127b^9c^5 + 42b^{10}c^4 + 26b^{11}c^3 - 12b^{12}c^2 - 635a^2b^2c^{11} + 1300a^2b^3c^{10} + 608a^2b^4c^9 - 1792a^2b^5c^8 - 60a^2b^6c^7 + 1218a^2b^7c^6 - 249a^2b^8c^5 - 340a^2b^9c^4 + 98a^2b^{10}c^3 + 20a^2b^{11}c^2 - 1616a^2b^2c^{11} - 3160a^3b^2c^{11} - 3440a^4b^2c^9 - 2132a^5b^2c^8 - 704a^6b^2c^7 - 96a^7b^2c^6 - 2242a^2b^2c^{10} + 4146a^2b^3c^9 + 1420a^2b^4c^8 - 4158a^2b^5c^7 + 77a^2b^6c^6 + 1735a^2b^7c^5 - 234a^2b^8c^4 - 222a^2b^9c^3 + 4a^2b^{10}c^2 - 3714a^3b^2c^9 + 6252a^3b^3c^8 + 1730a^3b^4c^7 - 4300a^3b^5c^6 - 79a^3b^6c^5 + 968a^3b^7c^4 + 2a^3b^8c^3 - 20a^3b^9c^2 - 3523a^4b^2c^8 + 5025a^4b^3c^7 + 1339a^4b^4c^6 - 2082a^4b^5c^5 - 192a^4b^6c^4 + 156a^4b^7c^3 + 8a^4b^8c^2 - 2031a^5b^2c^7 + 2104a^5b^3c^6 + 634a^5b^4c^5 - 388a^5b^5c^4 - 60a^5b^6c^3 - 676a^6b^2c^6 + 364a^6b^3c^5 + 136a^6b^4c^4 - 100a^7b^2c^5 - 404a^7b^2c^{12}))/c^8 - (((2048\tan(x/2)(24b^2c^{14} - 96a^2c^{14} - 8c^{15} + 152a^2*
\end{aligned}$$

$$\begin{aligned}
& c^{13} + 952a^3c^{12} + 1096a^4c^{11} + 304a^5c^{10} - 152a^6c^9 - 72a^7c^8 + 2b^2c^{13} - 38b^3c^{12} - 7b^4c^{11} + 39b^5c^{10} - 15b^6c^9 + 35b^7c^8 - 44b^8c^7 - 4b^9c^6 + 24b^{10}c^5 - 8b^{11}c^4 + 68a^2b^2c^{12} \\
& + 42a^2b^3c^{11} - 159a^2b^4c^{10} - 400a^2b^5c^9 + 537a^2b^6c^8 + 68a^2b^7c^7 - 276a^2b^8c^6 + 72a^2b^9c^5 + 8a^2b^{10}c^4 - 944a^2b^2c^{12} - 2520 \\
& a^3b^2c^{11} - 1824a^4b^2c^{10} - 272a^5b^2c^9 + 88a^6b^2c^8 + 584a^2b^2c^{11} + 1742a^2b^3c^{10} - 1645a^2b^4c^9 - 795a^2b^5c^8 + 1132a^2b^6c^7 - 112a^2b^7c^6 - 112a^2b^8c^5 + 8a^2b^9c^4 + 476a^3b^2c^1 \\
& 0 + 2766a^3b^3c^9 - 1705a^3b^4c^8 - 396a^3b^5c^7 + 456a^3b^6c^6 - 56a^3b^7c^5 - 8a^3b^8c^4 + 230a^4b^2c^9 + 880a^4b^3c^8 - 656 \\
& a^4b^4c^7 + 140a^4b^5c^6 + 72a^4b^6c^5 + 464a^5b^2c^8 - 192a^5b^3c^7 - 220a^5b^4c^6 + 256a^6b^2c^7 + 136a^2b^2c^{13}))/c^8 - (((2048 \\
& (48a^2c^{15} + 272a^2c^{14} + 576a^3c^{13} + 576a^4c^{12} + 272a^5c^{11} + 48a^6c^{10} - 12b^2c^{14} + 20b^3c^{13} + 18b^4c^{12} - 46b^5c^{11} + 6b^6c^{10} \\
& + 26b^7c^9 - 12b^8c^8 - 140a^2b^2c^{13} + 288a^2b^3c^{12} + 30a^2b^4c^{11} - 240a^2b^5c^{10} + 74a^2b^6c^9 + 20a^2b^7c^8 - 416a^2b^2c^{13} - 736 \\
& a^3b^2c^{12} - 544a^4b^2c^{11} - 144a^5b^2c^{10} - 360a^2b^2c^{12} + 728a^2b^3c^{11} - 50a^2b^4c^{10} - 182a^2b^5c^9 + 4a^2b^6c^8 - 360a^3b^2c^{11} + 544a^3b^3c^{10} \\
& + 10a^3b^4c^9 - 20a^3b^5c^8 - 172a^4b^2c^1 0 + 116a^4b^3c^9 + 8a^4b^4c^8 - 44a^5b^2c^9 - 80a^2b^2c^{14}))/c^8 + \\
& (2048 \tan(x/2) (a^2c^{15} - b^2c^{15} + (c^2 \cdot 3i)/2) (32a^2c^{16} - 64a^2c^{15} - 128a^3c^{14} + 64a^4c^{13} + 96a^5c^{12} - 8b^2c^{15} + 24b^3c^{14} - 32b^4c^{13} + 32b^5c^{12} - 24b^6c^{11} + 8b^7c^{10} + 144a^2b^2c^{14} - 200a^2b^3c^{13} + 184a^2b^4c^{12} - 56a^2b^5c^{11} - 8a^2b^6c^{10} + 288a^2b^2c^{14} + 352a^3b^2c^{13} - 32a^4b^2c^{12} - 320a^2b^2c^{13} + 8a^2b^3c^{12} + 96a^2b^4c^{11} - 8a^2b^5c^{10} - 272a^3b^2c^{12} + 40a^3b^3c^{11} + 8a^3b^4c^{10} - 56a^4b^2c^{11} - 96a^2b^2c^{15}))/c^{11} (a^2c^{15} - b^2c^{15} + (c^2 \cdot 3i)/2))/c^3 (a^2c^{15} - b^2c^{15} + (c^2 \cdot 3i)/2))/c^3 (a^2c^{15} - b^2c^{15} + (c^2 \cdot 3i)/2))/c^3 + (2048 \tan(x/2) (20a^2b^{12} + 42a^2c^{12} - 58b^2c^{12} + 4b^{12}c - 4b^{13} + 22c^{13} - 40a^2b^{11} + 40a^3b^{10} - 20a^4b^9 + 4a^5b^8 - 214a^2c^{11} - 938a^3c^{10} - 1538a^4c^9 - 1278a^5c^8 - 498a^6c^7 - 14a^7c^6 + 52a^8c^5 + 12a^9c^4 + 14b^2c^{11} + 34b^3c^{10} + 59b^4c^9 - 39b^5c^8 - 160b^6c^7 + 112b^7c^6 + 105b^8c^5 - 89b^9c^4 - 28b^{10}c^3 + 28b^{11}c^2 - 518a^2b^2c^{10} - 264a^2b^3c^9 + 1339a^2b^4c^8 - 92a^2b^5c^7 - 1312a^2b^6c^6 + 268a^2b^7c^5 + 649a^2b^8c^4 - 124a^2b^9c^3 - 180a^2b^{10}c^2 + 1550a^2b^2c^{10} - 160a^2b^{10}c + 3488a^3b^2c^9 + 320a^3b^9c + 3350a^4b^2c^8 - 300a^4b^8c + 1092a^5b^2c^7 + 136a^5b^7c - 462a^6b^2c^6 - 24a^6b^6c - 440a^7b^2c^5 - 92a^8b^2c^4 - 1568a^2b^2c^9 - 2708a^2b^3c^8 + 3564a^2b^4c^7 + 1964a^2b^5c^6 - 2790a^2b^6c^5 - 922a^2b^7c^4 + 1048a^2b^8c^3 + 276a^2b^9c^2 - 652a^3b^2c^8 - 6280a^3b^3c^7 + 2020a^3b^4c^6 + 4988a^3b^5c^5 - 1118a^3b^6c^4 - 2008a^3b^7c^3 + 140a^3b^8c^2 + 2350a^4b^2c^7 - 5630a^4b^3c^6 - 2295a^4b^4c^5 + 3563a^4b^5c^4 + 1260a^4b^6c^3 - 740a^4b^7c^2 + 3314a^5b^2c^6 - 1456a^5b^3c^5 - 2771a^5b^4c^4 + 308a^5b^5c^3 + 732a^5b^6c^2 + 1572a^6b^2c^5 + 576a^6b^3c^4 - 696a^6b^4c^3 -
\end{aligned}$$

$$\begin{aligned}
& 300*a^6*b^5*c^2 + 192*a^7*b^2*c^4 + 272*a^7*b^3*c^3 + 44*a^7*b^4*c^2 - 32*a^8*b^2*c^3 + 148*a*b*c^{11} + 24*a*b^{11}*c) / c^8 * (a*c^{1i} - b^{2*1i} + (c^{2*3i} / 2) * 1i) / c^3) / ((4096*(16*a*b^{11} + 274*a*c^{11} - 78*b*c^{11} + 4*b^{11}*c - 4*b^{12} + 33*c^{12} - 16*a^2*b^{10} - 16*a^3*b^9 + 40*a^4*b^8 - 16*a^5*b^7 - 16*a^6*b^6 + 16*a^7*b^5 - 4*a^8*b^4 + 1008*a^2*c^{10} + 2156*a^3*c^9 + 2954*a^4*c^8 + 2688*a^5*c^7 + 1624*a^6*c^6 + 628*a^7*c^5 + 141*a^8*c^4 + 14*a^9*c^3 - 64*b^2*c^{10} + 268*b^3*c^9 - 26*b^4*c^8 - 348*b^5*c^7 + 144*b^6*c^6 + 208*b^7*c^5 - 123*b^8*c^4 - 54*b^9*c^3 + 40*b^{10}*c^2 - 520*a*b^2*c^9 + 1516*a*b^3*c^8 + 144*a*b^4*c^7 - 1564*a*b^5*c^6 + 228*a*b^6*c^5 + 740*a*b^7*c^4 - 146*a*b^8*c^3 - 164*a*b^9*c^2 - 1624*a^2*b*c^9 - 112*a^2*b^9*c - 2676*a^3*b*c^8 + 128*a^3*b^8*c - 2588*a^4*b*c^7 + 56*a^4*b^7*c - 1388*a^5*b*c^6 - 184*a^5*b^6*c - 264*a^6*b*c^5 + 80*a^6*b^5*c + 116*a^7*b*c^4 + 32*a^7*b^4*c + 74*a^8*b*c^3 - 28*a^8*b^3*c + 12*a^9*b*c^2 + 4*a^9*b^2*c - 1820*a^2*b^2*c^8 + 3576*a^2*b^3*c^7 + 1032*a^2*b^4*c^6 - 2792*a^2*b^5*c^5 - 236*a^2*b^6*c^4 + 920*a^2*b^7*c^3 + 64*a^2*b^8*c^2 - 3584*a^3*b^2*c^7 + 4472*a^3*b^3*c^6 + 2236*a^3*b^4*c^5 - 2436*a^3*b^5*c^4 - 744*a^3*b^6*c^3 + 464*a^3*b^7*c^2 - 4336*a^4*b^2*c^6 + 3040*a^4*b^3*c^5 + 2390*a^4*b^4*c^4 - 964*a^4*b^5*c^3 - 592*a^4*b^6*c^2 - 3284*a^5*b^2*c^5 + 908*a^5*b^3*c^4 + 1364*a^5*b^4*c^3 - 40*a^5*b^5*c^2 - 1500*a^6*b^2*c^4 - 104*a^6*b^3*c^3 + 384*a^6*b^4*c^2 - 360*a^7*b^2*c^3 - 144*a^7*b^3*c^2 - 24*a^8*b^2*c^2 - 544*a*b*c^{10} + 20*a*b^{10}*c) / c^8 + (((((2048*(236*a*c^{13} - 32*b*c^{13} + 12*c^{14} + 1084*a^2*c^{12} + 2328*a^3*c^{11} + 2784*a^4*c^{10} + 1948*a^5*c^9 + 780*a^6*c^8 + 160*a^7*c^7 + 12*a^8*c^6 - 39*b^2*c^{12} + 121*b^3*c^{11} + 61*b^4*c^{10} - 220*b^5*c^9 - 36*b^6*c^8 + 232*b^7*c^7 - 28*b^8*c^6 - 127*b^9*c^5 + 42*b^{10}*c^4 + 26*b^{11}*c^3 - 12*b^{12}*c^2 - 635*a*b^2*c^{11} + 1300*a*b^3*c^{10} + 608*a*b^4*c^9 - 1792*a*b^5*c^8 - 60*a*b^6*c^7 + 1218*a*b^7*c^6 - 249*a*b^8*c^5 - 340*a*b^9*c^4 + 98*a*b^{10}*c^3 + 20*a*b^{11}*c^2 - 1616*a^2*b*c^{11} - 3160*a^3*b*c^{10} - 3440*a^4*b*c^9 - 2132*a^5*b*c^8 - 704*a^6*b*c^7 - 96*a^7*b*c^6 - 2242*a^2*b^2*c^{10} + 4146*a^2*b^3*c^9 + 1420*a^2*b^4*c^8 - 4158*a^2*b^5*c^7 + 77*a^2*b^6*c^6 + 1735*a^2*b^7*c^5 - 234*a^2*b^8*c^4 - 222*a^2*b^9*c^3 + 4*a^2*b^{10}*c^2 - 3714*a^3*b^2*c^9 + 6252*a^3*b^3*c^8 + 1730*a^3*b^4*c^7 - 4300*a^3*b^5*c^6 - 79*a^3*b^6*c^5 + 968*a^3*b^7*c^4 + 2*a^3*b^8*c^3 - 20*a^3*b^9*c^2 - 3523*a^4*b^2*c^8 + 5025*a^4*b^3*c^7 + 1339*a^4*b^4*c^6 - 2082*a^4*b^5*c^5 - 192*a^4*b^6*c^4 + 156*a^4*b^7*c^3 + 8*a^4*b^8*c^2 - 2031*a^5*b^2*c^7 + 2104*a^5*b^3*c^6 + 634*a^5*b^4*c^5 - 388*a^5*b^5*c^4 - 60*a^5*b^6*c^3 - 676*a^6*b^2*c^6 + 364*a^6*b^3*c^5 + 136*a^6*b^4*c^4 - 100*a^7*b^2*c^5 - 404*a*b*c^{12})) / c^8 + (((2048*tan(x/2)*(24*b*c^{14} - 96*a*c^{14} - 8*c^{15} + 152*a^2*c^{13} + 952*a^3*c^{12} + 1096*a^4*c^{11} + 304*a^5*c^{10} - 152*a^6*c^9 - 72*a^7*c^8 + 2*b^2*c^{13} - 38*b^3*c^{12} - 7*b^4*c^{11} + 39*b^5*c^{10} - 15*b^6*c^9 + 35*b^7*c^8 - 44*b^8*c^7 - 4*b^9*c^6 + 24*b^{10}*c^5 - 8*b^{11}*c^4 + 68*a*b^2*c^{12} + 42*a*b^3*c^{11} - 159*a*b^4*c^{10} - 400*a*b^5*c^9 + 537*a*b^6*c^8 + 68*a*b^7*c^7 - 276*a*b^8*c^6 + 72*a*b^9*c^5 + 8*a*b^{10}*c^4 - 944*a^2*b*c^{12} - 2520*a^3*b*c^{11} - 1824*a^4*b*c^{10} - 272*a^5*b*c^9 + 88*a^6*b*c^8 + 584*a^2*b^2*c^{11} + 1742*a^2*b^3*c^{10} - 1645*a^2*b^4*c^9 - 795*a^2*b^5*c^8 + 1132*a^2*b^6*c^7 - 112*a^2*b^7*c^6 - 112*a^2*b^8*c^5 + 8*a^2*b^9*c^4 + 476*a^3*b^2*c^{10} + 2766*a^3*b^3*c^9 - 17
\end{aligned}$$



$$\begin{aligned}
& 05a^3b^4c^8 - 396a^3b^5c^7 + 456a^3b^6c^6 - 56a^3b^7c^5 - 8a^3b^8c^4 + 230a^4b^2c^9 + 880a^4b^3c^8 - 656a^4b^4c^7 + 140a^4b^5c^6 + 72a^4b^6c^5 + 464a^5b^2c^8 - 192a^5b^3c^7 - 220a^5b^4c^6 + 256a^6b^2c^7 + 136a^6b^3c^6 - 192a^6b^4c^5 + 72a^6b^5c^4 - 20a^6b^6c^3 + 10a^6b^7c^2 - 5a^6b^8c^1 \\
& + ((2048(48a^4c^{15} + 272a^4c^{14} + 576a^3c^{13} + 576a^4c^{12} + 272a^5c^{11} + 48a^6c^{10} - 12b^2c^{14} + 20b^3c^{13} + 18b^4c^{12} - 46b^5c^{11} + 6b^6c^{10} + 26b^7c^9 - 12b^8c^8 - 140a^2b^2c^{13} + 288a^2b^3c^{12} + 30a^2b^4c^{11} - 240a^2b^5c^{10} + 74a^2b^6c^9 + 20a^2b^7c^8 - 416a^2b^8c^7 - 736a^3b^2c^{12} - 544a^3b^3c^{11} - 144a^3b^4c^{10} - 360a^3b^5c^9 + 728a^3b^6c^8 - 50a^3b^7c^7 - 50a^3b^8c^6 - 182a^2b^5c^9 + 4a^2b^6c^8 - 360a^3b^2c^{11} + 544a^3b^3c^{10} + 10a^3b^4c^9 - 20a^3b^5c^8 - 172a^4b^2c^{10} + 116a^4b^3c^9 + 8a^4b^4c^8 - 44a^4b^5c^7 - 80a^4b^6c^6 - 144a^4b^7c^5 - 144a^4b^8c^4))/c^8 - (2048 \tan(x/2) * (a^2c^{15} - b^2c^{14} + (c^2 * 3i)/2) * (32a^2c^{16} - 64a^2c^{15} - 128a^3c^{14} + 64a^4c^{13} + 96a^5c^{12} - 8b^2c^{15} + 24b^3c^{14} - 32b^4c^{13} + 32b^5c^{12} - 24b^6c^{11} + 8b^7c^{10} + 144a^2b^2c^{14} - 200a^2b^3c^{13} + 184a^2b^4c^{12} - 56a^2b^5c^{11} - 8a^2b^6c^{10} + 288a^2b^7c^9 + 352a^2b^8c^8 - 32a^3b^2c^{13} + 320a^3b^3c^{12} + 96a^3b^4c^{11} - 8a^3b^5c^{10} - 272a^3b^6c^9 + 40a^3b^7c^8 + 8a^3b^8c^7 - 56a^4b^2c^{11} - 96a^4b^3c^{10} - 144a^4b^4c^9 - 144a^4b^5c^8 - 144a^4b^6c^7 - 144a^4b^7c^6 - 144a^4b^8c^5))/c^{11} * (a^2c^{15} - b^2c^{14} + (c^2 * 3i)/2) / c^3 * (a^2c^{15} - b^2c^{14} + (c^2 * 3i)/2) / c^3 * (a^2c^{15} - b^2c^{14} + (c^2 * 3i)/2) / c^3 - (2048 \tan(x/2) * (20a^2b^{12} + 42a^2b^{11}c - 58a^2b^{10}c^2 + 4a^2b^9c^3 - 4a^2b^8c^4 + 22a^2b^7c^5 - 40a^2b^6c^6 + 40a^2b^5c^7 - 20a^2b^4c^8 + 4a^2b^3c^9 - 214a^2b^2c^{10} - 938a^2b^10c^2 + 1550a^2b^11c^3 - 160a^2b^12c^4 + 3488a^3b^2c^9 + 320a^3b^3c^8 + 3350a^3b^4c^7 - 300a^3b^5c^6 + 1092a^3b^6c^5 + 136a^3b^7c^4 - 462a^3b^8c^3 - 24a^3b^9c^2 - 440a^3b^{10}c^1 - 92a^3b^{11}c^0 - 1568a^4b^2c^{10} - 2708a^4b^3c^9 + 3564a^4b^4c^8 + 1964a^4b^5c^7 - 2790a^4b^6c^6 - 922a^4b^7c^5 + 1048a^4b^8c^4 + 276a^4b^9c^3 - 652a^4b^{10}c^2 - 6280a^4b^{11}c^1 + 2020a^4b^{12}c^0 + 4988a^5b^2c^9 - 1118a^5b^3c^8 - 2008a^5b^4c^7 + 140a^5b^5c^6 + 2350a^5b^6c^5 - 5630a^5b^7c^4 - 2295a^5b^8c^3 + 3563a^5b^9c^2 + 1260a^5b^{10}c^1 - 740a^5b^{11}c^0 + 3314a^6b^2c^9 - 1456a^6b^3c^8 - 2771a^6b^4c^7 + 308a^6b^5c^6 + 732a^6b^6c^5 + 1572a^6b^7c^4 + 576a^6b^8c^3 - 696a^6b^9c^2 - 300a^6b^{10}c^1 + 192a^6b^{11}c^0 + 272a^7b^3c^8 + 44a^7b^4c^7 - 32a^7b^5c^6 + 148a^7b^6c^5 + 24a^7b^7c^4 + 24a^7b^8c^3))/c^8 * (a^2c^{15} - b^2c^{14} + (c^2 * 3i)/2) / c^3 + (((((2048 * (236a^2c^{13} - 32b^2c^{13} + 12c^{14} + 1084a^2c^{12} + 2328a^3c^{11} + 2784a^4c^{10} + 1948a^5c^9 + 780a^6c^8 + 160a^7c^7 + 12a^8c^6 - 39b^2c^{12} + 121b^3c^{11} + 61b^4c^{10} - 220b^5c^9 - 36b^6c^8 + 232b^7c^7 - 28b^8c^6 - 127b^9c^5 + 42b^{10}c^4 + 26b^{11}c^3 - 12b^{12}c^2 - 635a^2b^2c^{11} + 1300a^2b^3c^{10} + 608a^2b^4c^9 - 1792a^2b^5c^8 - 60a^2b^6c^7 + 1218a^2b^7c^6 - 249a^2b^8c^5 - 340a^2b^9c^4 + 98a^2b^{10}c^3 + 20a^2b^{11}c^2
\end{aligned}$$

$$\begin{aligned}
& - 1616a^2b^2c^{11} - 3160a^3b^2c^{10} - 3440a^4b^2c^9 - 2132a^5b^2c^8 - 704 \\
& a^6b^2c^7 - 96a^7b^2c^6 - 2242a^2b^3c^{10} + 4146a^2b^3c^9 + 1420a^2 \\
& b^4c^8 - 4158a^2b^5c^7 + 77a^2b^6c^6 + 1735a^2b^7c^5 - 234a^2b \\
& ^8c^4 - 222a^2b^9c^3 + 4a^2b^{10}c^2 - 3714a^3b^2c^9 + 6252a^3b^3 \\
& c^8 + 1730a^3b^4c^7 - 4300a^3b^5c^6 - 79a^3b^6c^5 + 968a^3b^7c \\
& ^4 + 2a^3b^8c^3 - 20a^3b^9c^2 - 3523a^4b^2c^8 + 5025a^4b^3c^7 + \\
& 1339a^4b^4c^6 - 2082a^4b^5c^5 - 192a^4b^6c^4 + 156a^4b^7c^3 + \\
& 8a^4b^8c^2 - 2031a^5b^2c^7 + 2104a^5b^3c^6 + 634a^5b^4c^5 - 388 \\
& a^5b^5c^4 - 60a^5b^6c^3 - 676a^6b^2c^6 + 364a^6b^3c^5 + 136a^6 \\
& b^4c^4 - 100a^7b^2c^5 - 404a^8b^2c^4)) / c^8 - (((2048 \tan(x/2) (24b^2c^{14} \\
& - 96a^2c^{14} - 8c^{15} + 152a^2c^{13} + 952a^3c^{12} + 1096a^4c^{11} + 304 \\
& a^5c^{10} - 152a^6c^9 - 72a^7c^8 + 2b^2c^{13} - 38b^3c^{12} - 7b^4c^{11} \\
& + 39b^5c^{10} - 15b^6c^9 + 35b^7c^8 - 44b^8c^7 - 4b^9c^6 + 24b^{10}c^5 \\
& - 8b^{11}c^4 + 68a^2b^2c^{12} + 42a^2b^3c^{11} - 159a^2b^4c^{10} - 400a^2 \\
& b^5c^9 + 537a^2b^6c^8 + 68a^2b^7c^7 - 276a^2b^8c^6 + 72a^2b^9c^5 + 8 \\
& a^2b^{10}c^4 - 944a^2b^2c^{12} - 2520a^3b^2c^{11} - 1824a^4b^2c^{10} - 272a^5b^2 \\
& c^9 + 88a^6b^2c^8 + 584a^2b^2c^{11} + 1742a^2b^3c^{10} - 1645a^2b^4c^9 \\
& - 795a^2b^5c^8 + 1132a^2b^6c^7 - 112a^2b^7c^6 - 112a^2b^8c^5 \\
& + 8a^2b^9c^4 + 476a^3b^2c^{10} + 2766a^3b^3c^9 - 1705a^3b^4c^8 - \\
& 396a^3b^5c^7 + 456a^3b^6c^6 - 56a^3b^7c^5 - 8a^3b^8c^4 + 230a^4 \\
& b^2c^9 + 880a^4b^3c^8 - 656a^4b^4c^7 + 140a^4b^5c^6 + 72a^4b^6c^5 + 464a^5 \\
& b^2c^8 - 192a^5b^3c^7 - 220a^5b^4c^6 + 256a^6b^2c^7 + 136a^8b^2c^{13})) / c^8 - (((2048 (48a^2c^{15} + 272a^2c^{14} + 576a^3c^{13} \\
& + 576a^4c^{12} + 272a^5c^{11} + 48a^6c^{10} - 12b^2c^{14} + 20b^3c^{13} + \\
& 18b^4c^{12} - 46b^5c^{11} + 6b^6c^{10} + 26b^7c^9 - 12b^8c^8 - 140a^2b^2 \\
& c^{13} + 288a^2b^3c^{12} + 30a^2b^4c^{11} - 240a^2b^5c^{10} + 74a^2b^6c^9 + 2 \\
& 0a^2b^7c^8 - 416a^2b^2c^{13} - 736a^3b^2c^{12} - 544a^4b^2c^{11} - 144a^5b^2 \\
& c^{10} - 360a^2b^2c^{12} + 728a^2b^3c^{11} - 50a^2b^4c^{10} - 182a^2b^5c^9 + 4a^2 \\
& b^6c^8 - 360a^3b^2c^{11} + 544a^3b^3c^{10} + 10a^3b^4c^9 - 20a^3b^5c^8 - 172a^4 \\
& b^2c^{10} + 116a^4b^3c^9 + 8a^4b^4c^8 - 44a^5b^2c^9 - 80a^8b^2c^{14})) / c^8 + (2048 \tan(x/2) (a^2c^{11} - b^2c^{11} + (c^2 * 3i) \\
& ) / 2) (32a^2c^{16} - 64a^2c^{15} - 128a^3c^{14} + 64a^4c^{13} + 96a^5c^{12} - \\
& 8b^2c^{15} + 24b^3c^{14} - 32b^4c^{13} + 32b^5c^{12} - 24b^6c^{11} + 8b^7c^{10} \\
& + 144a^2b^2c^{14} - 200a^2b^3c^{13} + 184a^2b^4c^{12} - 56a^2b^5c^{11} - 8 \\
& a^2b^6c^{10} + 288a^2b^2c^{14} + 352a^3b^2c^{13} - 32a^4b^2c^{12} - 320a^2b^2 \\
& c^{13} + 8a^2b^3c^{12} + 96a^2b^4c^{11} - 8a^2b^5c^{10} - 272a^3b^2c^{11} \\
& + 40a^3b^3c^{11} + 8a^3b^4c^{10} - 56a^4b^2c^{11} - 96a^8b^2c^{15})) / c^{11} \\
& ) (a^2c^{11} - b^2c^{11} + (c^2 * 3i) / 2) / c^3) (a^2c^{11} - b^2c^{11} + (c^2 * 3i) / 2) / c^3) \\
& (a^2c^{11} - b^2c^{11} + (c^2 * 3i) / 2) / c^3 + (2048 \tan(x/2) (20a^2b^{12} + 42a^2c^{12} \\
& - 58b^2c^{12} + 4b^{12}c - 4b^{13} + 22c^{13} - 40a^2b^{11} + 40a^3b^{10} - 2 \\
& 0a^4b^9 + 4a^5b^8 - 214a^2c^{11} - 938a^3c^{10} - 1538a^4c^9 - 1278a^5 \\
& c^8 - 498a^6c^7 - 14a^7c^6 + 52a^8c^5 + 12a^9c^4 + 14b^2c^{11} + \\
& 34b^3c^{10} + 59b^4c^9 - 39b^5c^8 - 160b^6c^7 + 112b^7c^6 + 105b^8 \\
& c^5 - 89b^9c^4 - 28b^{10}c^3 + 28b^{11}c^2 - 518a^2b^2c^{10} - 264a^2b^3 \\
& c^9 + 1339a^2b^4c^8 - 92a^2b^5c^7 - 1312a^2b^6c^6 + 268a^2b^7c^5 + 649
\end{aligned}$$

$$\begin{aligned}
& *a*b^8*c^4 - 124*a*b^9*c^3 - 180*a*b^{10}*c^2 + 1550*a^2*b*c^{10} - 160*a^2*b^1 \\
& 0*c + 3488*a^3*b*c^9 + 320*a^3*b^9*c + 3350*a^4*b*c^8 - 300*a^4*b^8*c + 109 \\
& 2*a^5*b*c^7 + 136*a^5*b^7*c - 462*a^6*b*c^6 - 24*a^6*b^6*c - 440*a^7*b*c^5 \\
& - 92*a^8*b*c^4 - 1568*a^2*b^2*c^9 - 2708*a^2*b^3*c^8 + 3564*a^2*b^4*c^7 + 1 \\
& 964*a^2*b^5*c^6 - 2790*a^2*b^6*c^5 - 922*a^2*b^7*c^4 + 1048*a^2*b^8*c^3 + 2 \\
& 76*a^2*b^9*c^2 - 652*a^3*b^2*c^8 - 6280*a^3*b^3*c^7 + 2020*a^3*b^4*c^6 + 49 \\
& 88*a^3*b^5*c^5 - 1118*a^3*b^6*c^4 - 2008*a^3*b^7*c^3 + 140*a^3*b^8*c^2 + 23 \\
& 50*a^4*b^2*c^7 - 5630*a^4*b^3*c^6 - 2295*a^4*b^4*c^5 + 3563*a^4*b^5*c^4 + 1 \\
& 260*a^4*b^6*c^3 - 740*a^4*b^7*c^2 + 3314*a^5*b^2*c^6 - 1456*a^5*b^3*c^5 - 2 \\
& 771*a^5*b^4*c^4 + 308*a^5*b^5*c^3 + 732*a^5*b^6*c^2 + 1572*a^6*b^2*c^5 + 57 \\
& 6*a^6*b^3*c^4 - 696*a^6*b^4*c^3 - 300*a^6*b^5*c^2 + 192*a^7*b^2*c^4 + 272*a \\
& ^7*b^3*c^3 + 44*a^7*b^4*c^2 - 32*a^8*b^2*c^3 + 148*a*b*c^{11} + 24*a*b^{11}*c) \\
& /c^8)*(a*c^{1i} - b^2*1i + (c^2*3i)/2))/c^3))*(a*c^{1i} - b^2*1i + (c^2*3i)/2)* \\
& 2i)/c^3
\end{aligned}$$

### 3.7 $\int \frac{\sin^2(x)}{a+b \cos(x)+c \cos^2(x)} dx$

Optimal result	100
Rubi [A] (verified)	100
Mathematica [A] (verified)	102
Maple [C] (verified)	102
Fricas [B] (verification not implemented)	103
Sympy [F(-1)]	104
Maxima [F]	104
Giac [B] (verification not implemented)	105
Mupad [B] (verification not implemented)	108

#### Optimal result

Integrand size = 19, antiderivative size = 260

$$\int \frac{\sin^2(x)}{a+b \cos(x)+c \cos^2(x)} dx = -\frac{x}{c} + \frac{2\left(b - \frac{b^2-2c(a+c)}{\sqrt{b^2-4ac}}\right) \arctan\left(\frac{\sqrt{b-2c-\sqrt{b^2-4ac}} \tan\left(\frac{x}{2}\right)}{\sqrt{b+2c-\sqrt{b^2-4ac}}}\right)}{c\sqrt{b-2c-\sqrt{b^2-4ac}}\sqrt{b+2c-\sqrt{b^2-4ac}}} + \frac{2\left(b + \frac{b^2-2c(a+c)}{\sqrt{b^2-4ac}}\right) \arctan\left(\frac{\sqrt{b-2c+\sqrt{b^2-4ac}} \tan\left(\frac{x}{2}\right)}{\sqrt{b+2c+\sqrt{b^2-4ac}}}\right)}{c\sqrt{b-2c+\sqrt{b^2-4ac}}\sqrt{b+2c+\sqrt{b^2-4ac}}}$$

[Out]  $-x/c+2*\arctan((b-2*c-(-4*a*c+b^2)^(1/2))^(1/2)*\tan(1/2*x)/(b+2*c-(-4*a*c+b^2)^(1/2))^(1/2))*(b+(-b^2+2*c*(a+c))/(-4*a*c+b^2)^(1/2))/c/(b-2*c-(-4*a*c+b^2)^(1/2))^(1/2)/(b+2*c-(-4*a*c+b^2)^(1/2))^(1/2)+2*\arctan((b-2*c+(-4*a*c+b^2)^(1/2))^(1/2)*\tan(1/2*x)/(b+2*c+(-4*a*c+b^2)^(1/2))^(1/2))*(b+(b^2-2*c*(a+c))/(-4*a*c+b^2)^(1/2))/c/(b-2*c+(-4*a*c+b^2)^(1/2))^(1/2)/(b+2*c+(-4*a*c+b^2)^(1/2))^(1/2)$

#### Rubi [A] (verified)

Time = 1.45 (sec) , antiderivative size = 260, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 4,  $\frac{\text{number of rules}}{\text{integrand size}} = 0.211$ , Rules used = {3348, 3374, 2738, 211}

$$\int \frac{\sin^2(x)}{a+b \cos(x)+c \cos^2(x)} dx = \frac{2\left(b - \frac{b^2-2c(a+c)}{\sqrt{b^2-4ac}}\right) \arctan\left(\frac{\tan\left(\frac{x}{2}\right)\sqrt{-\sqrt{b^2-4ac}+b-2c}}{\sqrt{-\sqrt{b^2-4ac}+b+2c}}\right)}{c\sqrt{-\sqrt{b^2-4ac}+b-2c}\sqrt{-\sqrt{b^2-4ac}+b+2c}} + \frac{2\left(\frac{b^2-2c(a+c)}{\sqrt{b^2-4ac}} + b\right) \arctan\left(\frac{\tan\left(\frac{x}{2}\right)\sqrt{\sqrt{b^2-4ac}+b-2c}}{\sqrt{\sqrt{b^2-4ac}+b+2c}}\right)}{c\sqrt{\sqrt{b^2-4ac}+b-2c}\sqrt{\sqrt{b^2-4ac}+b+2c}} - \frac{x}{c}$$

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

[Out]  $-(x/c) + (2*(b - (b^2 - 2*c*(a + c))/\text{Sqrt}[b^2 - 4*a*c])*\text{ArcTan}[(\text{Sqrt}[b - 2*c - \text{Sqrt}[b^2 - 4*a*c]]*\text{Tan}[x/2])/\text{Sqrt}[b + 2*c - \text{Sqrt}[b^2 - 4*a*c]])]/(c*\text{Sqrt}[b - 2*c - \text{Sqrt}[b^2 - 4*a*c]]*\text{Sqrt}[b + 2*c - \text{Sqrt}[b^2 - 4*a*c]]) + (2*(b + (b^2 - 2*c*(a + c))/\text{Sqrt}[b^2 - 4*a*c])*\text{ArcTan}[(\text{Sqrt}[b - 2*c + \text{Sqrt}[b^2 - 4*a*c]]*\text{Tan}[x/2])/\text{Sqrt}[b + 2*c + \text{Sqrt}[b^2 - 4*a*c]])]/(c*\text{Sqrt}[b - 2*c + \text{Sqrt}[b^2 - 4*a*c]]*\text{Sqrt}[b + 2*c + \text{Sqrt}[b^2 - 4*a*c]])$

### Rule 211

Int[((a\_) + (b\_)\*(x\_)^2)^(-1), x\_Symbol] := Simp[(Rt[a/b, 2]/a)\*ArcTan[x/Rt[a/b, 2]], x] /; FreeQ[{a, b}, x] && PosQ[a/b]

### Rule 2738

Int[((a\_) + (b\_)\*sin[Pi/2 + (c\_) + (d\_)\*(x\_)])^(-1), x\_Symbol] := With[{e = FreeFactors[Tan[(c + d\*x)/2], x]}, Dist[2\*(e/d), Subst[Int[1/(a + b + (a - b)\*e^2\*x^2), x], x, Tan[(c + d\*x)/2]/e], x] /; FreeQ[{a, b, c, d}, x] && NeQ[a^2 - b^2, 0]

### Rule 3348

Int[((a\_) + cos[(d\_) + (e\_)\*(x\_)])^(n\_)\*(b\_) + cos[(d\_) + (e\_)\*(x\_)])^(n2\_)\*(c\_)^(p\_)\*sin[(d\_) + (e\_)\*(x\_)])^(m\_), x\_Symbol] := Int[ExpandTrig[(1 - cos[d + e\*x]^2)^(m/2)\*(a + b\*cos[d + e\*x]^n + c\*cos[d + e\*x]^(2\*n))^p, x], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[n2, 2\*n] && IntegerQ[m/2] && NeQ[b^2 - 4\*a\*c, 0] && IntegersQ[n, p]

### Rule 3374

Int[(cos[(d\_) + (e\_)\*(x\_)]\*(B\_) + (A\_))/((a\_) + cos[(d\_) + (e\_)\*(x\_)]\*(b\_) + cos[(d\_) + (e\_)\*(x\_)]^2\*(c\_)), x\_Symbol] := Module[{q = Rt[b^2 - 4\*a\*c, 2]}, Dist[B + (b\*B - 2\*A\*c)/q, Int[1/(b + q + 2\*c\*Cos[d + e\*x]), x], x] + Dist[B - (b\*B - 2\*A\*c)/q, Int[1/(b - q + 2\*c\*Cos[d + e\*x]), x], x] /; FreeQ[{a, b, c, d, e, A, B}, x] && NeQ[b^2 - 4\*a\*c, 0]

### Rubi steps

$$\begin{aligned} \text{integral} &= \int \left( -\frac{1}{c} + \frac{a(1 + \frac{c}{a}) + b \cos(x)}{c(a + b \cos(x) + c \cos^2(x))} \right) dx \\ &= -\frac{x}{c} + \frac{\int \frac{a(1 + \frac{c}{a}) + b \cos(x)}{a + b \cos(x) + c \cos^2(x)} dx}{c} \\ &= -\frac{x}{c} + \frac{\left( b - \frac{b^2 - 2c(a+c)}{\sqrt{b^2 - 4ac}} \right) \int \frac{1}{b - \sqrt{b^2 - 4ac} + 2c \cos(x)} dx}{c} + \frac{\left( b + \frac{b^2 - 2c(a+c)}{\sqrt{b^2 - 4ac}} \right) \int \frac{1}{b + \sqrt{b^2 - 4ac} + 2c \cos(x)} dx}{c} \end{aligned}$$

$$\begin{aligned}
&= -\frac{x}{c} + \frac{\left(2\left(b - \frac{b^2-2c(a+c)}{\sqrt{b^2-4ac}}\right)\right) \text{Subst}\left(\int \frac{1}{b+2c-\sqrt{b^2-4ac}+(b-2c-\sqrt{b^2-4ac})x^2} dx, x, \tan\left(\frac{x}{2}\right)\right)}{c} \\
&\quad + \frac{\left(2\left(b + \frac{b^2-2c(a+c)}{\sqrt{b^2-4ac}}\right)\right) \text{Subst}\left(\int \frac{1}{b+2c+\sqrt{b^2-4ac}+(b-2c+\sqrt{b^2-4ac})x^2} dx, x, \tan\left(\frac{x}{2}\right)\right)}{c} \\
&= -\frac{x}{c} + \frac{2\left(b - \frac{b^2-2c(a+c)}{\sqrt{b^2-4ac}}\right) \arctan\left(\frac{\sqrt{b-2c-\sqrt{b^2-4ac}}\tan\left(\frac{x}{2}\right)}{\sqrt{b+2c-\sqrt{b^2-4ac}}}\right)}{c\sqrt{b-2c-\sqrt{b^2-4ac}}\sqrt{b+2c-\sqrt{b^2-4ac}}} \\
&\quad + \frac{2\left(b + \frac{b^2-2c(a+c)}{\sqrt{b^2-4ac}}\right) \arctan\left(\frac{\sqrt{b-2c+\sqrt{b^2-4ac}}\tan\left(\frac{x}{2}\right)}{\sqrt{b+2c+\sqrt{b^2-4ac}}}\right)}{c\sqrt{b-2c+\sqrt{b^2-4ac}}\sqrt{b+2c+\sqrt{b^2-4ac}}}
\end{aligned}$$

### Mathematica [A] (verified)

Time = 0.46 (sec) , antiderivative size = 238, normalized size of antiderivative = 0.92

$$\begin{aligned}
&\int \frac{\sin^2(x)}{a + b \cos(x) + c \cos^2(x)} dx \\
&= \frac{-\sqrt{b^2-4ac}x - \frac{(b^2-2c(a+c)+b\sqrt{b^2-4ac}) \operatorname{arctanh}\left(\frac{(b-2c+\sqrt{b^2-4ac})\tan\left(\frac{x}{2}\right)}{\sqrt{-2b^2+4c(a+c)-2b\sqrt{b^2-4ac}}}\right)}{\sqrt{-\frac{b^2}{2}+c(a+c)-\frac{1}{2}b\sqrt{b^2-4ac}}} + \sqrt{-2b^2+4c(a+c)+2b\sqrt{b^2-4ac}}}{c\sqrt{b^2-4ac}}
\end{aligned}$$

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

[Out]  $(-\sqrt{b^2-4ac}x - ((b^2-2c(a+c)+b\sqrt{b^2-4ac})\operatorname{ArcTanh}[\frac{(b-2c+\sqrt{b^2-4ac})\tan[x/2]}{\sqrt{-2b^2+4c(a+c)-2b\sqrt{b^2-4ac}}}] / \sqrt{-1/2b^2+c(a+c)-(b\sqrt{b^2-4ac})/2}] + \sqrt{-2b^2+4c(a+c)+2b\sqrt{b^2-4ac}}\operatorname{ArcTanh}[\frac{(-b+2c+\sqrt{b^2-4ac})\tan[x/2]}{\sqrt{-2b^2+4c(a+c)+2b\sqrt{b^2-4ac}}}] / (c\sqrt{b^2-4ac}))$

### Maple [C] (verified)

Result contains higher order function than in optimal. Order 9 vs. order 3.

Time = 0.71 (sec) , antiderivative size = 185, normalized size of antiderivative = 0.71

method	result
risch	$-\frac{x}{c} - \frac{\left( -R = \text{RootOf}\left( (16a^2c^4 - 8ab^2c^3 + b^4c^2)Z^4 + (128a^2c^2 - 96ab^2c + 128ac^3 + 16b^4 - 32b^2c^2)Z^2 + 256a^2 + 512ac - 256b^2 + 256c^2 \right) - R \ln \right.}{4}$
default	$2(a-b+c) \left( \frac{(b+2c+\sqrt{-4ac+b^2}) \operatorname{arctanh}\left( \frac{(-a+b-c) \tan\left(\frac{x}{2}\right)}{\sqrt{(\sqrt{-4ac+b^2}-a+c)(a-b+c)}} \right)}{2\sqrt{-4ac+b^2} \sqrt{(\sqrt{-4ac+b^2}-a+c)(a-b+c)}} + \frac{(\sqrt{-4ac+b^2}-b-2c) \operatorname{arctan}\left( \frac{(a-b+c) \tan\left(\frac{x}{2}\right)}{\sqrt{(\sqrt{-4ac+b^2}+a-c)(a-b+c)}} \right)}{2\sqrt{-4ac+b^2} \sqrt{(\sqrt{-4ac+b^2}+a-c)(a-b+c)}} \right)$

[In] int(sin(x)^2/(a+cos(x)\*b+c\*cos(x)^2),x,method=\_RETURNVERBOSE)

[Out] -x/c-1/4\*sum(\_R\*ln(exp(I\*x)+(1/8\*I/b\*c^3\*a-1/32\*I\*b\*c^2)\*\_R^3+(1/4/b\*c^2\*a-1/16\*c\*b)\*\_R^2+(1/2\*I/b\*a\*c-1/4\*I\*b+1/2\*I/b\*c^2)\*\_R+1/b\*a+1/b\*c),\_R=RootOf((16\*a^2\*c^4-8\*a\*b^2\*c^3+b^4\*c^2)\*\_Z^4+(128\*a^2\*c^2-96\*a\*b^2\*c+128\*a\*c^3+16\*b^4-32\*b^2\*c^2)\*\_Z^2+256\*a^2+512\*a\*c-256\*b^2+256\*c^2))

## Fricas [B] (verification not implemented)

Leaf count of result is larger than twice the leaf count of optimal. 971 vs. 2(220) = 440.

Time = 0.34 (sec) , antiderivative size = 971, normalized size of antiderivative = 3.73

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

$$\frac{\sqrt{2}c \sqrt{-\frac{b^2-2ac-2c^2+(b^2c^2-4ac^3)\sqrt{\frac{b^2}{b^2c^4-4ac^5}}}{b^2c^2-4ac^3}}}{\sqrt{2}(b^2c^3-4ac^4)\sqrt{\frac{b^2}{b^2c^4-4ac^5}}} \sqrt{-\frac{b^2-2ac-2c^2+(b^2c^2-4ac^3)\sqrt{\frac{b^2}{b^2c^4-4ac^5}}}{b^2c^2-4ac^3}}$$

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

[Out] -1/4\*(sqrt(2)\*c\*sqrt(-(b^2 - 2\*a\*c - 2\*c^2 + (b^2\*c^2 - 4\*a\*c^3)\*sqrt(b^2/(b^2\*c^4 - 4\*a\*c^5))))/(b^2\*c^2 - 4\*a\*c^3))\*log(sqrt(2)\*(b^2\*c^3 - 4\*a\*c^4)\*sqrt(b^2/(b^2\*c^4 - 4\*a\*c^5))\*sqrt(-(b^2 - 2\*a\*c - 2\*c^2 + (b^2\*c^2 - 4\*a\*c^3)\*sqrt(b^2/(b^2\*c^4 - 4\*a\*c^5))))/(b^2\*c^2 - 4\*a\*c^3))\*sin(x) + b^2\*cos(x) + (b^2\*c^2 - 4\*a\*c^3)\*sqrt(b^2/(b^2\*c^4 - 4\*a\*c^5))\*cos(x) + 2\*b\*c) - sqrt(2)\*c\*sqrt(-(b^2 - 2\*a\*c - 2\*c^2 + (b^2\*c^2 - 4\*a\*c^3)\*sqrt(b^2/(b^2\*c^4 - 4\*a\*c^5))))/(b^2\*c^2 - 4\*a\*c^3))\*log(-sqrt(2)\*(b^2\*c^3 - 4\*a\*c^4)\*sqrt(b^2/(b^2\*c^4 - 4\*a\*c^5))\*sqrt(-(b^2 - 2\*a\*c - 2\*c^2 + (b^2\*c^2 - 4\*a\*c^3)\*sqrt(b^2/(b^2\*c^4 - 4\*a\*c^5))))/(b^2\*c^2 - 4\*a\*c^3))\*sin(x) + b^2\*cos(x) + (b^2\*c^2 - 4\*a\*c^3)\*sqrt(b^2/(b^2\*c^4 - 4\*a\*c^5))\*cos(x) + sqrt(2)\*c\*sqrt(-(b^2 - 2\*a\*c - 2\*c^2 - (b^2\*c^2 - 4\*a\*c^3)\*sqrt(b^2/(b^2\*c^4 - 4\*a\*c^5))))/(b^2\*c^2 - 4\*a\*c^3))\*log(sqrt(2)\*(b^2\*c^3 - 4\*a\*c^4)\*sqrt(b^2/(b^2\*c^4 - 4\*a\*c^5))\*sqrt(-(b^2 - 2\*a\*c - 2\*c^2 - (b^2\*c^2 - 4\*a\*c^3)\*sqrt(b^2/(b^2\*c^4 - 4\*a\*c^5))))/(b^2\*c^2 - 4\*a\*c^3))\*sin(x) + b^2\*cos(x) + (b^2\*c^2 - 4\*a\*c^3)\*sqrt(b^2/(b^2\*c^4 - 4\*a\*c^5))\*cos(x) + 2\*b\*c)

$$\begin{aligned}
& - 4*a*c^5)))/(b^2*c^2 - 4*a*c^3))*\sin(x) - b^2*\cos(x) + (b^2*c^2 - 4*a*c^3) \\
& *sqrt(b^2/(b^2*c^4 - 4*a*c^5))*\cos(x) - 2*b*c) - sqrt(2)*c*sqrt(-(b^2 - 2*a \\
& *c - 2*c^2 - (b^2*c^2 - 4*a*c^3))*sqrt(b^2/(b^2*c^4 - 4*a*c^5)))/(b^2*c^2 - \\
& 4*a*c^3))*\log(-sqrt(2)*(b^2*c^3 - 4*a*c^4))*sqrt(b^2/(b^2*c^4 - 4*a*c^5))*sq \\
& rt(-(b^2 - 2*a*c - 2*c^2 - (b^2*c^2 - 4*a*c^3))*sqrt(b^2/(b^2*c^4 - 4*a*c^5) \\
& ))/(b^2*c^2 - 4*a*c^3))*\sin(x) - b^2*\cos(x) + (b^2*c^2 - 4*a*c^3)*sqrt(b^2/ \\
& (b^2*c^4 - 4*a*c^5))*\cos(x) - 2*b*c) + 4*x)/c
\end{aligned}$$

## Sympy [F(-1)]

Timed out.

$$\int \frac{\sin^2(x)}{a + b \cos(x) + c \cos^2(x)} dx = \text{Timed out}$$

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

[Out] Timed out

## Maxima [F]

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

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

[Out] (c\*integrate(2\*(2\*b^2\*cos(3\*x)^2 + 2\*b^2\*cos(x)^2 + 2\*b^2\*sin(3\*x)^2 + 2\*b^2\*sin(x)^2 + 4\*(2\*a^2 + 3\*a\*c + c^2)\*cos(2\*x)^2 + b\*c\*cos(x) + 4\*(2\*a^2 + 3\*a\*c + c^2)\*sin(2\*x)^2 + 2\*(4\*a\*b + 3\*b\*c)\*sin(2\*x)\*sin(x) + (b\*c\*cos(3\*x) + b\*c\*cos(x) + 2\*(a\*c + c^2)\*cos(2\*x))\*cos(4\*x) + (4\*b^2\*cos(x) + b\*c + 2\*(4\*a\*b + 3\*b\*c)\*cos(2\*x))\*cos(3\*x) + 2\*(a\*c + c^2 + (4\*a\*b + 3\*b\*c)\*cos(x))\*cos(2\*x) + (b\*c\*sin(3\*x) + b\*c\*sin(x) + 2\*(a\*c + c^2)\*sin(2\*x))\*sin(4\*x) + 2\*(2\*b^2\*sin(x) + (4\*a\*b + 3\*b\*c)\*sin(2\*x))\*sin(3\*x))/(c^3\*cos(4\*x)^2 + 4\*b^2\*c\*cos(3\*x)^2 + 4\*b^2\*c\*cos(x)^2 + c^3\*sin(4\*x)^2 + 4\*b^2\*c\*sin(3\*x)^2 + 4\*b^2\*c\*sin(x)^2 + 4\*b\*c^2\*cos(x) + c^3 + 4\*(4\*a^2\*c + 4\*a\*c^2 + c^3)\*cos(2\*x)^2 + 4\*(4\*a^2\*c + 4\*a\*c^2 + c^3)\*sin(2\*x)^2 + 8\*(2\*a\*b\*c + b\*c^2)\*sin(2\*x)\*sin(x) + 2\*(2\*b\*c^2\*cos(3\*x) + 2\*b\*c^2\*cos(x) + c^3 + 2\*(2\*a\*c^2 + c^3)\*cos(2\*x))\*cos(4\*x) + 4\*(2\*b^2\*c\*cos(x) + b\*c^2 + 2\*(2\*a\*b\*c + b\*c^2)\*cos(2\*x))\*cos(3\*x) + 4\*(2\*a\*c^2 + c^3 + 2\*(2\*a\*b\*c + b\*c^2)\*cos(x))\*cos(2\*x) + 4\*(b\*c^2\*sin(3\*x) + b\*c^2\*sin(x) + (2\*a\*c^2 + c^3)\*sin(2\*x))\*sin(4\*x) + 8\*(b^2\*c\*sin(x) + (2\*a\*b\*c + b\*c^2)\*sin(2\*x))\*sin(3\*x)), x) - x)/c



**Giac [B] (verification not implemented)**

Leaf count of result is larger than twice the leaf count of optimal. 6566 vs.  $2(220) = 440$ .

Time = 2.51 (sec) , antiderivative size = 6566, normalized size of antiderivative = 25.25

$$\int \frac{\sin^2(x)}{a + b \cos(x) + c \cos^2(x)} dx = \text{Too large to display}$$

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

[Out]  $-x/c - ((2*a^2*b^4 - 4*a*b^5 + 2*b^6 - 16*a^3*b^2*c + 32*a^2*b^3*c - 12*a*b^4*c - 4*b^5*c + 32*a^4*c^2 - 64*a^3*b*c^2 + 32*a*b^3*c^2 + 2*b^4*c^2 + 64*a^3*c^3 - 64*a^2*b*c^3 - 16*a*b^2*c^3 + 32*a^2*c^4 + 3*\sqrt{a^2 - a*b + b*c - c^2} + \sqrt{b^2 - 4*a*c})*(a - b + c))*\sqrt{b^2 - 4*a*c}*a^2*b^2 - 2*(b^2 - 4*a*c)*a^2*b^2 - 2*\sqrt{a^2 - a*b + b*c - c^2} + \sqrt{b^2 - 4*a*c})*(a - b + c))*\sqrt{b^2 - 4*a*c}*a*b^3 + 4*(b^2 - 4*a*c)*a*b^3 - 5*\sqrt{a^2 - a*b + b*c - c^2} + \sqrt{b^2 - 4*a*c})*(a - b + c))*\sqrt{b^2 - 4*a*c}*b^4 - 2*(b^2 - 4*a*c)*b^4 - 12*\sqrt{a^2 - a*b + b*c - c^2} + \sqrt{b^2 - 4*a*c})*(a - b + c))*\sqrt{b^2 - 4*a*c}*a^3*c + 8*(b^2 - 4*a*c)*a^3*c + 8*\sqrt{a^2 - a*b + b*c - c^2} + \sqrt{b^2 - 4*a*c})*(a - b + c))*\sqrt{b^2 - 4*a*c}*a^2*b*c - 16*(b^2 - 4*a*c)*a^2*b*c + 34*\sqrt{a^2 - a*b + b*c - c^2} + \sqrt{b^2 - 4*a*c})*(a - b + c))*\sqrt{b^2 - 4*a*c}*a*b^2*c + 4*(b^2 - 4*a*c)*a*b^2*c + 6*\sqrt{a^2 - a*b + b*c - c^2} + \sqrt{b^2 - 4*a*c})*(a - b + c))*\sqrt{b^2 - 4*a*c}*b^3*c + 4*(b^2 - 4*a*c)*b^3*c - 56*\sqrt{a^2 - a*b + b*c - c^2} + \sqrt{b^2 - 4*a*c})*(a - b + c))*\sqrt{b^2 - 4*a*c}*a^2*c^2 + 16*(b^2 - 4*a*c)*a^2*c^2 - 24*\sqrt{a^2 - a*b + b*c - c^2} + \sqrt{b^2 - 4*a*c})*(a - b + c))*\sqrt{b^2 - 4*a*c}*a*b*c^2 - 16*(b^2 - 4*a*c)*a*b*c^2 - 5*\sqrt{a^2 - a*b + b*c - c^2} + \sqrt{b^2 - 4*a*c})*(a - b + c))*\sqrt{b^2 - 4*a*c}*b^2*c^2 - 2*(b^2 - 4*a*c)*b^2*c^2 + 20*\sqrt{a^2 - a*b + b*c - c^2} + \sqrt{b^2 - 4*a*c})*(a - b + c))*\sqrt{b^2 - 4*a*c}*a*c^3 + 8*(b^2 - 4*a*c)*a*c^3)*c^2*abs(a - b + c) - (4*a^2*b^4*c - 4*b^6*c - 32*a^3*b^2*c^2 + 40*a*b^4*c^2 + 64*a^4*c^3 - 128*a^2*b^2*c^3 + 4*b^4*c^3 + 128*a^3*c^4 - 32*a*b^2*c^4 + 64*a^2*c^5 + 3*\sqrt{a^2 - a*b + b*c - c^2} + \sqrt{b^2 - 4*a*c})*(a - b + c))*a^3*b^2*c + \sqrt{a^2 - a*b + b*c - c^2} + \sqrt{b^2 - 4*a*c})*(a - b + c))*a^2*b^3*c - 7*\sqrt{a^2 - a*b + b*c - c^2} + \sqrt{b^2 - 4*a*c})*(a - b + c))*a*b^4*c - 5*\sqrt{a^2 - a*b + b*c - c^2} + \sqrt{b^2 - 4*a*c})*(a - b + c))*b^5*c - 12*\sqrt{a^2 - a*b + b*c - c^2} + \sqrt{b^2 - 4*a*c})*(a - b + c))*a^4*c^2 - 4*\sqrt{a^2 - a*b + b*c - c^2} + \sqrt{b^2 - 4*a*c})*(a - b + c))*a^3*b*c^2 + 45*\sqrt{a^2 - a*b + b*c - c^2} + \sqrt{b^2 - 4*a*c})*(a - b + c))*a^2*b^2*c^2 + 38*\sqrt{a^2 - a*b + b*c - c^2} + \sqrt{b^2 - 4*a*c})*(a - b + c))*a*b^3*c^2 + \sqrt{a^2 - a*b + b*c - c^2} + \sqrt{b^2 - 4*a*c})*(a - b + c))*b^4*c^2 - 68*\sqrt{a^2 - a*b + b*c - c^2} + \sqrt{b^2 - 4*a*c})*(a - b + c))*a^3*c^3 - 72*\sqrt{a^2 - a*b + b*c - c^2} + \sqrt{b^2 - 4*a*c})*(a - b + c))*a^2*b*c^3 + 5*\sqrt{a^2 - a*b + b*c - c^2} + \sqrt{b^2 - 4*a*c})*(a - b + c))*a*b^2*c^3 + \sqrt{a^2 - a*b + b*c - c^2} + \sqrt{b^2 - 4*a*c})*(a - b + c))*b^3*c^3 - 36*\sqrt{a^2 - a*b + b*c - c^2} + \sqrt{b^2 - 4*a*c})*($

$$\begin{aligned}
& a - b + c)) * a^2 * c^4 - 4 * \sqrt{a^2 - a * b + b * c - c^2 + \sqrt{b^2 - 4 * a * c}} * (a - \\
& b + c)) * a * b * c^4 - 5 * \sqrt{a^2 - a * b + b * c - c^2 + \sqrt{b^2 - 4 * a * c}} * (a - b \\
& + c)) * b^2 * c^4 + 20 * \sqrt{a^2 - a * b + b * c - c^2 + \sqrt{b^2 - 4 * a * c}} * (a - b + \\
& c)) * a * c^5 - 4 * (b^2 - 4 * a * c) * a^2 * b^2 * c + 4 * (b^2 - 4 * a * c) * b^4 * c + 16 * (b^2 - 4 \\
& * a * c) * a^3 * c^2 - 24 * (b^2 - 4 * a * c) * a * b^2 * c^2 + 32 * (b^2 - 4 * a * c) * a^2 * c^3 - 4 * ( \\
& b^2 - 4 * a * c) * b^2 * c^3 + 16 * (b^2 - 4 * a * c) * a * c^4) * \text{abs}(a - b + c) * \text{abs}(c) + (2 * a \\
& ^3 * b^3 * c^2 - 4 * a^2 * b^4 * c^2 + 2 * a * b^5 * c^2 - 8 * a^4 * b * c^3 + 20 * a^3 * b^2 * c^3 - 1 \\
& 4 * a^2 * b^3 * c^3 + 4 * a * b^4 * c^3 - 2 * b^5 * c^3 - 16 * a^4 * c^4 + 24 * a^3 * b * c^4 - 12 * a^ \\
& 2 * b^2 * c^4 + 6 * a * b^3 * c^4 - 16 * a^3 * c^5 + 8 * a^2 * b * c^5 - 4 * a * b^2 * c^5 + 6 * b^3 * c^ \\
& 5 + 16 * a^2 * c^6 - 24 * a * b * c^6 - 4 * b^2 * c^6 + 16 * a * c^7 + 3 * \sqrt{a^2 - a * b + b * c \\
& - c^2 + \sqrt{b^2 - 4 * a * c}} * (a - b + c)) * \sqrt{b^2 - 4 * a * c} * a^3 * b * c^2 - 2 * (b^ \\
& 2 - 4 * a * c) * a^3 * b * c^2 - 2 * \sqrt{a^2 - a * b + b * c - c^2 + \sqrt{b^2 - 4 * a * c}} * (a \\
& - b + c)) * \sqrt{b^2 - 4 * a * c} * a^2 * b^2 * c^2 + 4 * (b^2 - 4 * a * c) * a^2 * b^2 * c^2 - 5 * s \\
& \text{qrt}(a^2 - a * b + b * c - c^2 + \sqrt{b^2 - 4 * a * c}} * (a - b + c)) * \sqrt{b^2 - 4 * a * c} \\
& ) * a * b^3 * c^2 - 2 * (b^2 - 4 * a * c) * a * b^3 * c^2 + 6 * \sqrt{a^2 - a * b + b * c - c^2 + s \\
& \text{qrt}(b^2 - 4 * a * c}} * (a - b + c)) * \sqrt{b^2 - 4 * a * c} * a^3 * c^3 - 4 * (b^2 - 4 * a * c) * a^ \\
& 3 * c^3 + 7 * \sqrt{a^2 - a * b + b * c - c^2 + \sqrt{b^2 - 4 * a * c}} * (a - b + c)) * \sqrt{ \\
& b^2 - 4 * a * c} * a^2 * b * c^3 + 6 * (b^2 - 4 * a * c) * a^2 * b * c^3 - 2 * \sqrt{a^2 - a * b + b * c \\
& - c^2 + \sqrt{b^2 - 4 * a * c}} * (a - b + c)) * \sqrt{b^2 - 4 * a * c} * a * b^2 * c^3 - 4 * (b^ \\
& 2 - 4 * a * c) * a * b^2 * c^3 + 5 * \sqrt{a^2 - a * b + b * c - c^2 + \sqrt{b^2 - 4 * a * c}} * (a \\
& - b + c)) * \sqrt{b^2 - 4 * a * c} * b^3 * c^3 + 2 * (b^2 - 4 * a * c) * b^3 * c^3 + 22 * \sqrt{a^2 \\
& - a * b + b * c - c^2 + \sqrt{b^2 - 4 * a * c}} * (a - b + c)) * \sqrt{b^2 - 4 * a * c} * a^2 * c \\
& ^4 - 4 * (b^2 - 4 * a * c) * a^2 * c^4 - 3 * \sqrt{a^2 - a * b + b * c - c^2 + \sqrt{b^2 - 4 * \\
& a * c}} * (a - b + c)) * \sqrt{b^2 - 4 * a * c} * a * b * c^4 + 2 * (b^2 - 4 * a * c) * a * b * c^4 + 4 * s \\
& \text{qrt}(a^2 - a * b + b * c - c^2 + \sqrt{b^2 - 4 * a * c}} * (a - b + c)) * \sqrt{b^2 - 4 * a * c} \\
& ) * b^2 * c^4 - 38 * \sqrt{a^2 - a * b + b * c - c^2 + \sqrt{b^2 - 4 * a * c}} * (a - b + c)) * \\
& \sqrt{b^2 - 4 * a * c} * a * c^5 + 4 * (b^2 - 4 * a * c) * a * c^5 - 7 * \sqrt{a^2 - a * b + b * c - \\
& c^2 + \sqrt{b^2 - 4 * a * c}} * (a - b + c)) * \sqrt{b^2 - 4 * a * c} * b * c^5 - 6 * (b^2 - 4 * a \\
& * c) * b * c^5 + 10 * \sqrt{a^2 - a * b + b * c - c^2 + \sqrt{b^2 - 4 * a * c}} * (a - b + c)) * \\
& \sqrt{b^2 - 4 * a * c} * c^6 + 4 * (b^2 - 4 * a * c) * c^6) * \text{abs}(a - b + c)) * (\text{pi} * \text{floor}(1/2 * \\
& x / \text{pi} + 1/2) + \text{arctan}(2 * \sqrt{1/2} * \tan(1/2 * x) / \sqrt{(2 * a * c - 2 * c^2 + \sqrt{-4 * ( \\
& a * c + b * c + c^2) * (a * c - b * c + c^2) + 4 * (a * c - c^2)^2}) / (a * c - b * c + c^2)})) \\
& / ((3 * a^5 * b^2 * c^2 - 5 * a^4 * b^3 * c^2 - 6 * a^3 * b^4 * c^2 + 10 * a^2 * b^5 * c^2 + 3 * a * b^6 \\
& * c^2 - 5 * b^7 * c^2 - 12 * a^6 * c^3 + 20 * a^5 * b * c^3 + 47 * a^4 * b^2 * c^3 - 60 * a^3 * b^3 * \\
& c^3 - 46 * a^2 * b^4 * c^3 + 40 * a * b^5 * c^3 + 11 * b^6 * c^3 - 92 * a^5 * c^4 + 80 * a^4 * b * c^ \\
& 4 + 182 * a^3 * b^2 * c^4 - 94 * a^2 * b^3 * c^4 - 78 * a * b^4 * c^4 - 6 * b^5 * c^4 - 184 * a^4 * c \\
& ^5 + 56 * a^3 * b * c^5 + 166 * a^2 * b^2 * c^5 + 36 * a * b^3 * c^5 - 6 * b^4 * c^5 - 120 * a^3 * c^ \\
& 6 - 48 * a^2 * b * c^6 + 23 * a * b^2 * c^6 + 11 * b^3 * c^6 + 4 * a^2 * c^7 - 44 * a * b * c^7 - 5 * b \\
& ^2 * c^7 + 20 * a * c^8) * \text{abs}(c)) + ((2 * a^2 * b^4 - 4 * a * b^5 + 2 * b^6 - 16 * a^3 * b^2 * c + \\
& 32 * a^2 * b^3 * c - 12 * a * b^4 * c - 4 * b^5 * c + 32 * a^4 * c^2 - 64 * a^3 * b * c^2 + 32 * a * b^3 \\
& * c^2 + 2 * b^4 * c^2 + 64 * a^3 * c^3 - 64 * a^2 * b * c^3 - 16 * a * b^2 * c^3 + 32 * a^2 * c^4 + \\
& 3 * \sqrt{a^2 - a * b + b * c - c^2 - \sqrt{b^2 - 4 * a * c}} * (a - b + c)) * \sqrt{b^2 - 4 * \\
& a * c} * a^2 * b^2 - 2 * (b^2 - 4 * a * c) * a^2 * b^2 - 2 * \sqrt{a^2 - a * b + b * c - c^2 - s \\
& \text{qrt}(b^2 - 4 * a * c}} * (a - b + c)) * \sqrt{b^2 - 4 * a * c} * a * b^3 + 4 * (b^2 - 4 * a * c) * a * b^3 \\
& - 5 * \sqrt{a^2 - a * b + b * c - c^2 - \sqrt{b^2 - 4 * a * c}} * (a - b + c)) * \sqrt{b^2 -
\end{aligned}$$

$$\begin{aligned}
& 4*a*c)*b^4 - 2*(b^2 - 4*a*c)*b^4 - 12*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(b^2 - 4*a*c)*(a - b + c))*\sqrt{b^2 - 4*a*c}*a^3*c + 8*(b^2 - 4*a*c)*a^3*c + 8 \\
& *\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c))*\sqrt{b^2 - 4*a*c}*a^2*b*c - 16*(b^2 - 4*a*c)*a^2*b*c + 34*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c))*\sqrt{b^2 - 4*a*c} \\
& *a*b^2*c + 4*(b^2 - 4*a*c)*a*b^2*c + 6*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c))*\sqrt{b^2 - 4*a*c}*b^3*c + 4*(b^2 - 4*a*c)*b^3*c - 56*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c))*\sqrt{b^2 - 4*a*c} \\
& *a^2*c^2 + 16*(b^2 - 4*a*c)*a^2*c^2 - 24*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c))*\sqrt{b^2 - 4*a*c}*a*b*c^2 - 16*(b^2 - 4*a*c)*a*b*c^2 - 5*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c))*\sqrt{b^2 - 4*a*c} \\
& *b^2*c^2 - 2*(b^2 - 4*a*c)*b^2*c^2 + 20*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c))*\sqrt{b^2 - 4*a*c}*a*c^3 + 8*(b^2 - 4*a*c)*a*c^3)*c^2*abs(a - b + c) - (4*a^2*b^4*c - 4*b^6*c - 32*a^3*b^2*c^2 + 40*a*b^4*c^2 + 64*a^4*c^3 - 128*a^2*b^2*c^3 + 4*b^4*c^3 + 128*a^3*c^4 - 32*a*b^2*c^4 + 64*a^2*c^5 - 3*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c))*a^3*b^2*c - \sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c))*a^2*b^3*c + 7*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c))*a*b^4*c + 5*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c))*b^5*c + 12*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c))*a^4*c^2 + 4*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c))*a^3*b*c^2 - 45*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c))*a^2*b^2*c^2 - 38*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c))*a*b^3*c^2 - \sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c))*b^4*c^2 + 68*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c))*a^3*c^3 + 72*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c))*a^2*b*c^3 - 5*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c))*a*b^2*c^3 - \sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c))*b^3*c^3 + 36*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c))*a^2*c^4 + 4*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c))*a*b*c^4 + 5*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c))*b^2*c^4 - 20*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c))*a*c^5 - 4*(b^2 - 4*a*c)*a^2*b^2*c + 4*(b^2 - 4*a*c)*b^4*c + 16*(b^2 - 4*a*c)*a^3*c^2 - 24*(b^2 - 4*a*c)*a*b^2*c^2 + 32*(b^2 - 4*a*c)*a^2*c^3 - 4*(b^2 - 4*a*c)*b^2*c^3 + 16*(b^2 - 4*a*c)*a*c^4)*abs(a - b + c)*abs(c) + (2*a^3*b^3*c^2 - 4*a^2*b^4*c^2 + 2*a*b^5*c^2 - 8*a^4*b*c^3 + 20*a^3*b^2*c^3 - 14*a^2*b^3*c^3 + 4*a*b^4*c^3 - 2*b^5*c^3 - 16*a^4*c^4 + 24*a^3*b*c^4 - 12*a^2*b^2*c^4 + 6*a*b^3*c^4 - 16*a^3*c^5 + 8*a^2*b*c^5 - 4*a*b^2*c^5 + 6*b^3*c^5 + 16*a^2*c^6 - 24*a*b*c^6 - 4*b^2*c^6 + 16*a*c^7 + 3*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c))*\sqrt{b^2 - 4*a*c} \\
& *a^3*b*c^2 - 2*(b^2 - 4*a*c)*a^3*b*c^2 - 2*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c))*\sqrt{b^2 - 4*a*c}*a^2*b^2*c^2 + 4*(b^2 - 4*a*c)*a^2*b^2*c^2 - 5*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c))*\sqrt{b^2 - 4*a*c} \\
& *a*b^3*c^2 - 2*(b^2 - 4*a*c)*a*b^3*c^2 + 6*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c))*\sqrt{b^2 - 4*a*c}*a^3*c^3 + 7*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c))*\sqrt{b^2 - 4*a*c}
\end{aligned}$$

```

*c)*(a - b + c))*sqrt(b^2 - 4*a*c)*a^2*b*c^3 + 6*(b^2 - 4*a*c)*a^2*b*c^3 -
2*sqrt(a^2 - a*b + b*c - c^2 - sqrt(b^2 - 4*a*c))*(a - b + c))*sqrt(b^2 - 4*
a*c)*a*b^2*c^3 - 4*(b^2 - 4*a*c)*a*b^2*c^3 + 5*sqrt(a^2 - a*b + b*c - c^2 -
sqrt(b^2 - 4*a*c))*(a - b + c))*sqrt(b^2 - 4*a*c)*b^3*c^3 + 2*(b^2 - 4*a*c)
*b^3*c^3 + 22*sqrt(a^2 - a*b + b*c - c^2 - sqrt(b^2 - 4*a*c))*(a - b + c))*s
qrt(b^2 - 4*a*c)*a^2*c^4 - 4*(b^2 - 4*a*c)*a^2*c^4 - 3*sqrt(a^2 - a*b + b*c
- c^2 - sqrt(b^2 - 4*a*c))*(a - b + c))*sqrt(b^2 - 4*a*c)*a*b*c^4 + 2*(b^2
- 4*a*c)*a*b*c^4 + 4*sqrt(a^2 - a*b + b*c - c^2 - sqrt(b^2 - 4*a*c))*(a - b
+ c))*sqrt(b^2 - 4*a*c)*b^2*c^4 - 38*sqrt(a^2 - a*b + b*c - c^2 - sqrt(b^2
- 4*a*c))*(a - b + c))*sqrt(b^2 - 4*a*c)*a*c^5 + 4*(b^2 - 4*a*c)*a*c^5 - 7*s
qrt(a^2 - a*b + b*c - c^2 - sqrt(b^2 - 4*a*c))*(a - b + c))*sqrt(b^2 - 4*a*c
)*b*c^5 - 6*(b^2 - 4*a*c)*b*c^5 + 10*sqrt(a^2 - a*b + b*c - c^2 - sqrt(b^2
- 4*a*c))*(a - b + c))*sqrt(b^2 - 4*a*c)*c^6 + 4*(b^2 - 4*a*c)*c^6)*abs(a -
b + c))*(pi*floor(1/2*x/pi + 1/2) + arctan(2*sqrt(1/2)*tan(1/2*x)/sqrt((2*a
*c - 2*c^2 - sqrt(-4*(a*c + b*c + c^2))*(a*c - b*c + c^2) + 4*(a*c - c^2)^2)
)/(a*c - b*c + c^2))))/(3*a^5*b^2*c^2 - 5*a^4*b^3*c^2 - 6*a^3*b^4*c^2 + 10
*a^2*b^5*c^2 + 3*a*b^6*c^2 - 5*b^7*c^2 - 12*a^6*c^3 + 20*a^5*b*c^3 + 47*a^4
*b^2*c^3 - 60*a^3*b^3*c^3 - 46*a^2*b^4*c^3 + 40*a*b^5*c^3 + 11*b^6*c^3 - 92
*a^5*c^4 + 80*a^4*b*c^4 + 182*a^3*b^2*c^4 - 94*a^2*b^3*c^4 - 78*a*b^4*c^4 -
6*b^5*c^4 - 184*a^4*c^5 + 56*a^3*b*c^5 + 166*a^2*b^2*c^5 + 36*a*b^3*c^5 -
6*b^4*c^5 - 120*a^3*c^6 - 48*a^2*b*c^6 + 23*a*b^2*c^6 + 11*b^3*c^6 + 4*a^2*
c^7 - 44*a*b*c^7 - 5*b^2*c^7 + 20*a*c^8)*abs(c))

```

## Mupad [B] (verification not implemented)

Time = 14.83 (sec) , antiderivative size = 16390, normalized size of antiderivative = 63.04

$$\int \frac{\sin^2(x)}{a + b \cos(x) + c \cos^2(x)} dx = \text{Too large to display}$$

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

```

[Out] atan(((tan(x/2)*(57344*a^4*b - 57344*a*b^4 + 8192*a*c^4 + 8192*a^4*c + 5734
4*b*c^4 - 57344*b^4*c - 24576*a^5 + 24576*b^5 - 24576*c^5 + 49152*a^2*b^3 -
49152*a^3*b^2 + 147456*a^2*c^3 + 147456*a^3*c^2 - 49152*b^2*c^3 + 49152*b^
3*c^2 + 245760*a*b^2*c^2 - 442368*a^2*b*c^2 + 245760*a^2*b^2*c - 163840*a*b
*c^3 - 32768*a*b^3*c - 163840*a^3*b*c) + (-8*a*c^3 + b*(-(4*a*c - b^2)^3)^
(1/2) + b^4 + 8*a^2*c^2 - 2*b^2*c^2 - 6*a*b^2*c)/(2*(16*a^2*c^4 + b^4*c^2 -
8*a*b^2*c^3)))^(1/2)*(32768*a*b^5 - 253952*a*c^5 - 24576*a^5*c + 57344*b*c
^5 + 57344*b^5*c - 24576*b^6 - 24576*c^6 + 16384*a^2*b^4 - 32768*a^3*b^3 +
8192*a^4*b^2 - 638976*a^2*c^4 - 638976*a^3*c^3 - 253952*a^4*c^2 + 24576*b^2
*c^4 - 114688*b^3*c^3 + 24576*b^4*c^2 + (tan(x/2)*(16384*a*b^6 - 81920*a*c^
6 + 49152*b*c^6 + 49152*b^6*c - 16384*b^7 - 16384*c^7 + 16384*a^2*b^5 - 163
84*a^3*b^4 + 229376*a^2*c^5 + 491520*a^3*c^4 + 49152*a^4*c^3 - 147456*a^5*c
^2 - 32768*b^2*c^5 - 32768*b^5*c^2 + 327680*a*b^3*c^3 - 425984*a*b^4*c^2 -

```

$$\begin{aligned}
& 1015808a^2b^4c^4 - 180224a^2b^4c^3 - 983040a^3b^4c^3 - 65536a^3b^4c^2 + 49152a^4b^4c^2 + 98304a^4b^4c + 851968a^2b^2c^3 + 131072a^2b^3c^2 + 393216a^3b^2c^2 + 65536a^3b^2c + 98304a^3b^2c + (- (8a^3c^3 + b^4 - (4a^2c - b^2)^3)^{1/2} + b^4 + 8a^2c^2 - 2b^2c^2 - 6a^2b^2c) / (2(16a^2c^4 + b^4c^2 - 8a^2b^2c^3))^{1/2} * (24576b^2c^6 - 393216a^2c^6 - 589824a^3c^5 - 393216a^4c^4 - 98304a^5c^3 - 98304a^6c^2 - 49152b^3c^5 + 49152b^4c^4 - 24576b^5c^3 - 24576b^6c^2 + 98304a^2b^2c^5 - 344064a^2b^3c^4 + 98304a^2b^4c^3 + 49152a^2b^5c^2 + 589824a^2b^6c^2 + 589824a^3b^6c^2 + 196608a^4b^6c^2 + 147456a^2b^2c^4 - 344064a^2b^3c^3 + 98304a^3b^2c^3 - 49152a^3b^3c^2 + 24576a^4b^2c^2 + 196608a^4b^3c^2 - \tan(x/2) * (- (8a^3c^3 + b^4 - (4a^2c - b^2)^3)^{1/2} + b^4 + 8a^2c^2 - 2b^2c^2 - 6a^2b^2c) / (2(16a^2c^4 + b^4c^2 - 8a^2b^2c^3))^{1/2} * (65536a^8c^8 - 131072a^2c^7 - 262144a^3c^6 + 131072a^4c^5 + 196608a^5c^4 - 16384b^2c^7 + 49152b^3c^6 - 65536b^4c^5 + 65536b^5c^4 - 49152b^6c^3 + 16384b^7c^2 + 294912a^2b^2c^6 - 409600a^2b^3c^5 + 376832a^2b^4c^4 - 114688a^2b^5c^3 - 16384a^2b^6c^2 + 589824a^2b^6c^2 + 720896a^3b^6c^2 - 65536a^4b^6c^2 - 655360a^2b^2c^5 + 16384a^2b^3c^4 + 196608a^2b^4c^3 - 16384a^2b^5c^2 - 557056a^3b^2c^4 + 81920a^3b^3c^3 + 16384a^3b^4c^2 - 114688a^4b^2c^3 - 196608a^4b^3c^2) * (- (8a^3c^3 + b^4 - (4a^2c - b^2)^3)^{1/2} + b^4 + 8a^2c^2 - 2b^2c^2 - 6a^2b^2c) / (2(16a^2c^4 + b^4c^2 - 8a^2b^2c^3))^{1/2} + 147456a^2b^2c^3 - 458752a^2b^3c^2 + 802816a^2b^3c^2 - 245760a^2b^3c + 557056a^3b^3c^2 - 16384a^3b^2c + 98304a^2b^2c^2 + 425984a^2b^3c^2 + 106496a^2b^4c + 122880a^4b^4c) * (- (8a^3c^3 + b^4 - (4a^2c - b^2)^3)^{1/2} + b^4 + 8a^2c^2 - 2b^2c^2 - 6a^2b^2c) / (2(16a^2c^4 + b^4c^2 - 8a^2b^2c^3))^{1/2} * 1i + (\tan(x/2) * (57344a^4b - 57344a^4b^4 + 8192a^4c + 8192a^4c + 57344b^4c - 57344b^4c - 24576a^5 + 24576b^5 - 24576c^5 + 49152a^2b^3 - 49152a^3b^2 + 147456a^2c^3 + 147456a^3c^2 - 49152b^2c^3 + 49152b^3c^2 + 245760a^2b^2c^2 - 442368a^2b^3c^2 + 245760a^2b^2c - 163840a^2b^3c - 32768a^2b^3c - 163840a^3b^3c) - (- (8a^3c^3 + b^4 - (4a^2c - b^2)^3)^{1/2} + b^4 + 8a^2c^2 - 2b^2c^2 - 6a^2b^2c) / (2(16a^2c^4 + b^4c^2 - 8a^2b^2c^3))^{1/2} * (32768a^5b^5 - 253952a^5c^5 - 24576a^5c^5 + 57344b^5c^5 + 57344b^5c^5 - 24576b^6 - 24576c^6 + 16384a^2b^4 - 32768a^3b^3 + 8192a^4b^2 - 638976a^2c^4 - 638976a^3c^3 - 253952a^4c^2 + 24576b^2c^4 - 114688b^3c^3 + 24576b^4c^2 - (\tan(x/2) * (16384a^2b^6 - 81920a^2c^6 + 49152b^6c^6 + 49152b^6c^6 - 16384b^7 - 16384c^7 + 16384a^2b^5 - 16384a^3b^4 + 229376a^2c^5 + 491520a^3c^4 + 49152a^4c^3 - 147456a^5c^2 - 32768b^2c^5 - 32768b^5c^2 + 327680a^2b^3c^3 - 425984a^2b^4c^2 - 1015808a^2b^4c^2 - 180224a^2b^4c - 983040a^3b^4c^3 - 65536a^3b^4c^2 + 49152a^4b^4c^2 + 98304a^4b^4c + 851968a^2b^2c^3 + 131072a^2b^3c^2 + 393216a^3b^2c^2 + 65536a^3b^2c + 98304a^3b^2c) - (- (8a^3c^3 + b^4 - (4a^2c - b^2)^3)^{1/2} + b^4 + 8a^2c^2 - 2b^2c^2 - 6a^2b^2c) / (2(16a^2c^4 + b^4c^2 - 8a^2b^2c^3))^{1/2} * (24576b^2c^6 - 393216a^2c^6 - 589824a^3c^5 - 393216a^4c^4 - 98304a^5c^3 - 98304a^6c^2 - 49152b^3c^5 + 49152b^4c^4 - 24576b^5c^3 - 24576b^6c^2 + 98304a^2b^2c^5 - 344064a^2b^3c^4 + 98304a^2b^4c^3 + 49152a^2b^5c^2 + 589824a^2
\end{aligned}$$

$$\begin{aligned}
& *b*c^5 + 589824*a^3*b*c^4 + 196608*a^4*b*c^3 + 147456*a^2*b^2*c^4 - 344064* \\
& a^2*b^3*c^3 + 98304*a^3*b^2*c^3 - 49152*a^3*b^3*c^2 + 24576*a^4*b^2*c^2 + 1 \\
& 96608*a*b*c^6 + \tan(x/2)*(-(8*a*c^3 + b*(-(4*a*c - b^2)^3)^{(1/2)} + b^4 + 8* \\
& a^2*c^2 - 2*b^2*c^2 - 6*a*b^2*c)/(2*(16*a^2*c^4 + b^4*c^2 - 8*a*b^2*c^3)))^ \\
& (1/2)*(65536*a*c^8 - 131072*a^2*c^7 - 262144*a^3*c^6 + 131072*a^4*c^5 + 196 \\
& 608*a^5*c^4 - 16384*b^2*c^7 + 49152*b^3*c^6 - 65536*b^4*c^5 + 65536*b^5*c^4 \\
& - 49152*b^6*c^3 + 16384*b^7*c^2 + 294912*a*b^2*c^6 - 409600*a*b^3*c^5 + 37 \\
& 6832*a*b^4*c^4 - 114688*a*b^5*c^3 - 16384*a*b^6*c^2 + 589824*a^2*b*c^6 + 72 \\
& 0896*a^3*b*c^5 - 65536*a^4*b*c^4 - 655360*a^2*b^2*c^5 + 16384*a^2*b^3*c^4 + \\
& 196608*a^2*b^4*c^3 - 16384*a^2*b^5*c^2 - 557056*a^3*b^2*c^4 + 81920*a^3*b^ \\
& 3*c^3 + 16384*a^3*b^4*c^2 - 114688*a^4*b^2*c^3 - 196608*a*b*c^7)))*(-(8*a*c \\
& ^3 + b*(-(4*a*c - b^2)^3)^{(1/2)} + b^4 + 8*a^2*c^2 - 2*b^2*c^2 - 6*a*b^2*c)/ \\
& (2*(16*a^2*c^4 + b^4*c^2 - 8*a*b^2*c^3)))^{(1/2)} + 147456*a*b^2*c^3 - 458752 \\
& *a*b^3*c^2 + 802816*a^2*b*c^3 - 245760*a^2*b^3*c + 557056*a^3*b*c^2 - 16384 \\
& *a^3*b^2*c + 98304*a^2*b^2*c^2 + 425984*a*b*c^4 + 106496*a*b^4*c + 122880*a \\
& ^4*b*c))*(-(8*a*c^3 + b*(-(4*a*c - b^2)^3)^{(1/2)} + b^4 + 8*a^2*c^2 - 2*b^2* \\
& c^2 - 6*a*b^2*c)/(2*(16*a^2*c^4 + b^4*c^2 - 8*a*b^2*c^3)))^{(1/2)}*1i)/((\tan( \\
& x/2)*(57344*a^4*b - 57344*a*b^4 + 8192*a*c^4 + 8192*a^4*c + 57344*b*c^4 - 5 \\
& 7344*b^4*c - 24576*a^5 + 24576*b^5 - 24576*c^5 + 49152*a^2*b^3 - 49152*a^3* \\
& b^2 + 147456*a^2*c^3 + 147456*a^3*c^2 - 49152*b^2*c^3 + 49152*b^3*c^2 + 245 \\
& 760*a*b^2*c^2 - 442368*a^2*b*c^2 + 245760*a^2*b^2*c - 163840*a*b*c^3 - 3276 \\
& 8*a*b^3*c - 163840*a^3*b*c) - (-(8*a*c^3 + b*(-(4*a*c - b^2)^3)^{(1/2)} + b^4 \\
& + 8*a^2*c^2 - 2*b^2*c^2 - 6*a*b^2*c)/(2*(16*a^2*c^4 + b^4*c^2 - 8*a*b^2*c^ \\
& 3)))^{(1/2)}*(32768*a*b^5 - 253952*a*c^5 - 24576*a^5*c + 57344*b*c^5 + 57344* \\
& b^5*c - 24576*b^6 - 24576*c^6 + 16384*a^2*b^4 - 32768*a^3*b^3 + 8192*a^4*b^ \\
& 2 - 638976*a^2*c^4 - 638976*a^3*c^3 - 253952*a^4*c^2 + 24576*b^2*c^4 - 1146 \\
& 88*b^3*c^3 + 24576*b^4*c^2 - (\tan(x/2)*(16384*a*b^6 - 81920*a*c^6 + 49152*b \\
& *c^6 + 49152*b^6*c - 16384*b^7 - 16384*c^7 + 16384*a^2*b^5 - 16384*a^3*b^4 \\
& + 229376*a^2*c^5 + 491520*a^3*c^4 + 49152*a^4*c^3 - 147456*a^5*c^2 - 32768* \\
& b^2*c^5 - 32768*b^5*c^2 + 327680*a*b^3*c^3 - 425984*a*b^4*c^2 - 1015808*a^2 \\
& *b*c^4 - 180224*a^2*b^4*c - 983040*a^3*b*c^3 - 65536*a^3*b^3*c + 49152*a^4* \\
& b*c^2 + 98304*a^4*b^2*c + 851968*a^2*b^2*c^3 + 131072*a^2*b^3*c^2 + 393216* \\
& a^3*b^2*c^2 + 65536*a*b*c^5 + 98304*a*b^5*c) - (-(8*a*c^3 + b*(-(4*a*c - b^ \\
& 2)^3)^{(1/2)} + b^4 + 8*a^2*c^2 - 2*b^2*c^2 - 6*a*b^2*c)/(2*(16*a^2*c^4 + b^4 \\
& *c^2 - 8*a*b^2*c^3)))^{(1/2)}*(24576*b^2*c^6 - 393216*a^2*c^6 - 589824*a^3*c^ \\
& 5 - 393216*a^4*c^4 - 98304*a^5*c^3 - 98304*a*c^7 - 49152*b^3*c^5 + 49152*b^ \\
& 5*c^3 - 24576*b^6*c^2 + 98304*a*b^2*c^5 - 344064*a*b^3*c^4 + 98304*a*b^4*c^ \\
& 3 + 49152*a*b^5*c^2 + 589824*a^2*b*c^5 + 589824*a^3*b*c^4 + 196608*a^4*b*c^ \\
& 3 + 147456*a^2*b^2*c^4 - 344064*a^2*b^3*c^3 + 98304*a^3*b^2*c^3 - 49152*a^3 \\
& *b^3*c^2 + 24576*a^4*b^2*c^2 + 196608*a*b*c^6 + \tan(x/2)*(-(8*a*c^3 + b*(-( \\
& 4*a*c - b^2)^3)^{(1/2)} + b^4 + 8*a^2*c^2 - 2*b^2*c^2 - 6*a*b^2*c)/(2*(16*a^2 \\
& *c^4 + b^4*c^2 - 8*a*b^2*c^3)))^{(1/2)}*(65536*a*c^8 - 131072*a^2*c^7 - 26214 \\
& 4*a^3*c^6 + 131072*a^4*c^5 + 196608*a^5*c^4 - 16384*b^2*c^7 + 49152*b^3*c^6 \\
& - 65536*b^4*c^5 + 65536*b^5*c^4 - 49152*b^6*c^3 + 16384*b^7*c^2 + 294912*a \\
& *b^2*c^6 - 409600*a*b^3*c^5 + 376832*a*b^4*c^4 - 114688*a*b^5*c^3 - 16384*a
\end{aligned}$$

$$\begin{aligned}
& b^6 c^2 + 589824 a^2 b c^6 + 720896 a^3 b c^5 - 65536 a^4 b c^4 - 655360 a^2 b^2 c^5 + 16384 a^2 b^3 c^4 + 196608 a^2 b^4 c^3 - 16384 a^2 b^5 c^2 - 57056 a^3 b^2 c^4 + 81920 a^3 b^3 c^3 + 16384 a^3 b^4 c^2 - 114688 a^4 b^2 c^3 - 196608 a b c^7)) * (- (8 a^3 c^3 + b * (- (4 a c - b^2)^3)^{(1/2)} + b^4 + 8 a^2 c^2 - 2 b^2 c^2 - 6 a b^2 c) / (2 * (16 a^2 c^4 + b^4 c^2 - 8 a b^2 c^3)))^{(1/2)} + 147456 a b^2 c^3 - 458752 a b^3 c^2 + 802816 a^2 b c^3 - 245760 a^2 b^3 c + 557056 a^3 b c^2 - 16384 a^3 b^2 c + 98304 a^2 b^2 c^2 + 425984 a b c^4 + 106496 a b^4 c + 122880 a^4 b c) * (- (8 a^3 c^3 + b * (- (4 a c - b^2)^3)^{(1/2)} + b^4 + 8 a^2 c^2 - 2 b^2 c^2 - 6 a b^2 c) / (2 * (16 a^2 c^4 + b^4 c^2 - 8 a b^2 c^3)))^{(1/2)} - (\tan(x/2) * (57344 a^4 b - 57344 a b^4 + 8192 a^4 c + 8192 a^4 c + 57344 b c^4 - 57344 b^4 c - 24576 a^5 + 24576 b^5 - 24576 c^5 + 49152 a^2 b^3 - 49152 a^3 b^2 + 147456 a^2 c^3 + 147456 a^3 c^2 - 49152 b^2 c^3 + 49152 b^3 c^2 + 245760 a b^2 c^2 - 442368 a^2 b c^2 + 245760 a^2 b^2 c - 163840 a b c^3 - 32768 a b^3 c - 163840 a^3 b c) + (- (8 a^3 c^3 + b * (- (4 a c - b^2)^3)^{(1/2)} + b^4 + 8 a^2 c^2 - 2 b^2 c^2 - 6 a b^2 c) / (2 * (16 a^2 c^4 + b^4 c^2 - 8 a b^2 c^3)))^{(1/2)} * (32768 a b^5 - 253952 a^2 c^5 - 24576 a^5 c + 57344 b c^5 + 57344 b^5 c - 24576 b^6 - 24576 c^6 + 16384 a^2 b^4 - 32768 a^3 b^3 + 8192 a^4 b^2 - 638976 a^2 c^4 - 638976 a^3 c^3 - 253952 a^4 c^2 + 24576 b^2 c^4 - 114688 b^3 c^3 + 24576 b^4 c^2 + (\tan(x/2) * (16384 a b^6 - 81920 a^2 c^6 + 49152 b c^6 + 49152 b^6 c - 16384 b^7 - 16384 c^7 + 16384 a^2 b^5 - 16384 a^3 b^4 + 229376 a^2 c^5 + 491520 a^3 c^4 + 49152 a^4 c^3 - 147456 a^5 c^2 - 32768 b^2 c^5 - 32768 b^5 c^2 + 327680 a b^3 c^3 - 425984 a b^4 c^2 - 1015808 a^2 b c^4 - 180224 a^2 b^4 c - 983040 a^3 b c^3 - 65536 a^3 b^3 c + 49152 a^4 b c^2 + 98304 a^4 b^2 c + 851968 a^2 b^2 c^3 + 131072 a^2 b^3 c^2 + 393216 a^3 b^2 c^2 + 65536 a b c^5 + 98304 a b^5 c) + (- (8 a^3 c^3 + b * (- (4 a c - b^2)^3)^{(1/2)} + b^4 + 8 a^2 c^2 - 2 b^2 c^2 - 6 a b^2 c) / (2 * (16 a^2 c^4 + b^4 c^2 - 8 a b^2 c^3)))^{(1/2)} * (24576 b^2 c^6 - 393216 a^2 c^6 - 589824 a^3 c^5 - 393216 a^4 c^4 - 98304 a^5 c^3 - 98304 a^2 c^7 - 49152 b^3 c^5 + 49152 b^5 c^3 - 24576 b^6 c^2 + 98304 a b^2 c^5 - 344064 a b^3 c^4 + 98304 a b^4 c^3 + 49152 a b^5 c^2 + 589824 a^2 b c^5 + 589824 a^3 b c^4 + 196608 a^4 b c^3 + 147456 a^2 b^2 c^4 - 344064 a^2 b^3 c^3 + 98304 a^3 b^2 c^3 - 49152 a^3 b^3 c^2 + 24576 a^4 b^2 c^2 + 196608 a b c^6 - \tan(x/2) * (- (8 a^3 c^3 + b * (- (4 a c - b^2)^3)^{(1/2)} + b^4 + 8 a^2 c^2 - 2 b^2 c^2 - 6 a b^2 c) / (2 * (16 a^2 c^4 + b^4 c^2 - 8 a b^2 c^3)))^{(1/2)} * (65536 a^8 c^8 - 131072 a^2 c^7 - 262144 a^3 c^6 + 131072 a^4 c^5 + 196608 a^5 c^4 - 16384 b^2 c^7 + 49152 b^3 c^6 - 65536 b^4 c^5 + 65536 b^5 c^4 - 49152 b^6 c^3 + 16384 b^7 c^2 + 294912 a b^2 c^6 - 409600 a b^3 c^5 + 376832 a b^4 c^4 - 114688 a b^5 c^3 - 16384 a b^6 c^2 + 589824 a^2 b c^6 + 720896 a^3 b c^5 - 65536 a^4 b c^4 - 655360 a^2 b^2 c^5 + 16384 a^2 b^3 c^4 + 196608 a^2 b^4 c^3 - 16384 a^2 b^5 c^2 - 557056 a^3 b^2 c^4 + 81920 a^3 b^3 c^3 + 16384 a^3 b^4 c^2 - 114688 a^4 b^2 c^3 - 196608 a b c^7)) * (- (8 a^3 c^3 + b * (- (4 a c - b^2)^3)^{(1/2)} + b^4 + 8 a^2 c^2 - 2 b^2 c^2 - 6 a b^2 c) / (2 * (16 a^2 c^4 + b^4 c^2 - 8 a b^2 c^3)))^{(1/2)} + 147456 a b^2 c^3 - 458752 a b^3 c^2 + 802816 a^2 b c^3 - 245760 a^2 b^3 c + 557056 a^3 b c^2 - 16384 a^3 b^2 c + 98304 a^2 b^2 c^2 + 425984 a b c^4 + 106496 a b^4 c + 122880 a^4 b c) * (- (8
\end{aligned}$$

$$\begin{aligned}
& a^3c^3 + b^4(-4ac - b^2)^3)^{1/2} + b^4 + 8a^2c^2 - 2b^2c^2 - 6ab^2c \\
& c)/(2(16a^2c^4 + b^4c^2 - 8ab^2c^3))^{1/2} + 131072ab^3 - 131072a^3b \\
& + 262144a^3c^3 + 262144a^3c - 131072b^3c^3 + 131072b^3c + 65536a^4 \\
& - 65536b^4 + 65536c^4 + 393216a^2c^2 - 393216ab^2c^2 - 393216a^2b^2c \\
& *c))(-8a^3c^3 + b^4(-4ac - b^2)^3)^{1/2} + b^4 + 8a^2c^2 - 2b^2c^2 \\
& - 6ab^2c)/(2(16a^2c^4 + b^4c^2 - 8ab^2c^3))^{1/2} *2i + \operatorname{atan}((\tan(x/2) \\
& * (57344a^4b - 57344ab^4 + 8192a^4c + 8192a^4c + 57344b^4c - 57344b^4c \\
& - 24576a^5 + 24576b^5 - 24576c^5 + 49152a^2b^3 - 49152a^3b^2 + 147456a^2c^3 \\
& + 147456a^3c^2 - 49152b^2c^3 + 49152b^3c^2 + 245760ab^2c^2 - 442368a^2b^2c^2 \\
& + 245760a^2b^2c - 163840ab^2c^3 - 32768ab^3c - 163840a^3b^3c) + (-8a^3c^3 - \\
& b^4(-4ac - b^2)^3)^{1/2} + b^4 + 8a^2c^2 - 2b^2c^2 - 6ab^2c)/(2(16a^2c^4 + \\
& b^4c^2 - 8ab^2c^3))^{1/2} * (32768ab^5 - 253952a^5c - 24576a^5c + 57344b^5c \\
& + 57344b^5c - 24576b^6 - 24576c^6 + 16384a^2b^4 - 32768a^3b^3 + 8192a^4b^2 \\
& - 638976a^2c^4 - 638976a^3c^3 - 253952a^4c^2 + 24576b^2c^4 - 114688b^3c^3 \\
& + 24576b^4c^2 + \operatorname{tan}(x/2) * (16384ab^6 - 81920a^6c + 49152b^6c^6 + 49152b^6c \\
& - 16384b^7 - 16384c^7 + 16384a^2b^5 - 16384a^3b^4 + 229376a^2c^5 + 491520a^3c^4 \\
& + 49152a^4c^3 - 147456a^5c^2 - 32768b^2c^5 - 32768b^5c^2 + 327680ab^3c^3 \\
& - 425984ab^4c^2 - 1015808a^2b^2c^4 - 180224a^2b^4c - 983040a^3b^2c^3 - 65536a^3b^3c \\
& + 49152a^4b^2c^2 + 98304a^4b^2c + 851968a^2b^2c^3 + 131072a^2b^3c^2 + 393216 \\
& a^3b^2c^2 + 65536ab^2c^5 + 98304ab^5c) + (-8a^3c^3 - b^4(-4ac - b^2)^3)^{1/2} \\
& + b^4 + 8a^2c^2 - 2b^2c^2 - 6ab^2c)/(2(16a^2c^4 + b^4c^2 - 8ab^2c^3))^{1/2} \\
& * (24576b^2c^6 - 393216a^2c^6 - 589824a^3c^5 - 393216a^4c^4 - 98304a^5c^3 - 98304a^7 \\
& - 49152b^3c^5 + 49152b^5c^3 - 24576b^6c^2 + 98304ab^2c^5 - 344064ab^3c^4 + 98304ab^4c^3 \\
& + 49152ab^5c^2 + 589824a^2b^2c^5 + 589824a^3b^2c^4 + 196608a^4b^2c^3 + 147456a^2b^2c^4 \\
& - 344064a^2b^3c^3 + 98304a^3b^2c^3 - 49152a^3b^3c^2 + 24576a^4b^2c^2 + 196608ab^2c^6 \\
& - \operatorname{tan}(x/2) * (-8a^3c^3 - b^4(-4ac - b^2)^3)^{1/2} + b^4 + 8a^2c^2 - 2b^2c^2 - 6ab^2c \\
& )/(2(16a^2c^4 + b^4c^2 - 8ab^2c^3))^{1/2} * (65536a^8 - 131072a^2c^7 - 262144a^3c^6 \\
& + 131072a^4c^5 + 196608a^5c^4 - 16384b^2c^7 + 49152b^3c^6 - 65536b^4c^5 + 65536b^5c^4 \\
& - 49152b^6c^3 + 16384b^7c^2 + 294912ab^2c^6 - 409600ab^3c^5 + 376832ab^4c^4 - 114688ab^5c^3 \\
& - 16384ab^6c^2 + 589824a^2b^2c^6 + 720896a^3b^2c^5 - 65536a^4b^2c^4 - 655360 \\
& a^2b^2c^5 + 16384a^2b^3c^4 + 196608a^2b^4c^3 - 16384a^2b^5c^2 - 557056a^3b^2c^4 \\
& + 81920a^3b^3c^3 + 16384a^3b^4c^2 - 114688a^4b^2c^3 - 196608ab^2c^7))(-8a^3c^3 - \\
& b^4(-4ac - b^2)^3)^{1/2} + b^4 + 8a^2c^2 - 2b^2c^2 - 6ab^2c)/(2(16a^2c^4 + b^4c^2 - 8ab^2c^3)) \\
& )^{1/2} + 147456ab^2c^3 - 458752ab^3c^2 + 802816a^2b^2c^3 - 245760a^2b^3c \\
& + 557056a^3b^2c^2 - 16384a^3b^2c + 98304a^2b^2c^2 + 425984ab^2c^4 + 106496ab^4c \\
& + 122880a^4b^2c))(-8a^3c^3 - b^4(-4ac - b^2)^3)^{1/2} + b^4 + 8a^2c^2 - 2b^2c^2 - 6ab^2c \\
& )/(2(16a^2c^4 + b^4c^2 - 8ab^2c^3))^{1/2} *1i + \operatorname{tan}(x/2) * (57344a^4b - 57344ab^4 + 8192a^4c \\
& + 8192a^4c + 57344b^4c - 57344b^4c - 24576a^5 + 24576b^5 - 2457
\end{aligned}$$



$$\begin{aligned}
& 6*c^5 + 49152*a^2*b^3 - 49152*a^3*b^2 + 147456*a^2*c^3 + 147456*a^3*c^2 - 4 \\
& 9152*b^2*c^3 + 49152*b^3*c^2 + 245760*a*b^2*c^2 - 442368*a^2*b*c^2 + 245760 \\
& *a^2*b^2*c - 163840*a*b*c^3 - 32768*a*b^3*c - 163840*a^3*b*c) - ((8*a*c^3 \\
& - b*(-(4*a*c - b^2)^3)^{(1/2)} + b^4 + 8*a^2*c^2 - 2*b^2*c^2 - 6*a*b^2*c)/(2* \\
& (16*a^2*c^4 + b^4*c^2 - 8*a*b^2*c^3)))^{(1/2)}*(32768*a*b^5 - 253952*a*c^5 - \\
& 24576*a^5*c + 57344*b*c^5 + 57344*b^5*c - 24576*b^6 - 24576*c^6 + 16384*a^2 \\
& *b^4 - 32768*a^3*b^3 + 8192*a^4*b^2 - 638976*a^2*c^4 - 638976*a^3*c^3 - 253 \\
& 952*a^4*c^2 + 24576*b^2*c^4 - 114688*b^3*c^3 + 24576*b^4*c^2 - (\tan(x/2)*(1 \\
& 6384*a*b^6 - 81920*a*c^6 + 49152*b*c^6 + 49152*b^6*c - 16384*b^7 - 16384*c^ \\
& 7 + 16384*a^2*b^5 - 16384*a^3*b^4 + 229376*a^2*c^5 + 491520*a^3*c^4 + 49152 \\
& *a^4*c^3 - 147456*a^5*c^2 - 32768*b^2*c^5 - 32768*b^5*c^2 + 327680*a*b^3*c^ \\
& 3 - 425984*a*b^4*c^2 - 1015808*a^2*b*c^4 - 180224*a^2*b^4*c - 983040*a^3*b* \\
& c^3 - 65536*a^3*b^3*c + 49152*a^4*b*c^2 + 98304*a^4*b^2*c + 851968*a^2*b^2* \\
& c^3 + 131072*a^2*b^3*c^2 + 393216*a^3*b^2*c^2 + 65536*a*b*c^5 + 98304*a*b^5 \\
& *c) - ((8*a*c^3 - b*(-(4*a*c - b^2)^3)^{(1/2)} + b^4 + 8*a^2*c^2 - 2*b^2*c^2 \\
& - 6*a*b^2*c)/(2*(16*a^2*c^4 + b^4*c^2 - 8*a*b^2*c^3)))^{(1/2)}*(24576*b^2*c^ \\
& 6 - 393216*a^2*c^6 - 589824*a^3*c^5 - 393216*a^4*c^4 - 98304*a^5*c^3 - 9830 \\
& 4*a*c^7 - 49152*b^3*c^5 + 49152*b^5*c^3 - 24576*b^6*c^2 + 98304*a*b^2*c^5 - \\
& 344064*a*b^3*c^4 + 98304*a*b^4*c^3 + 49152*a*b^5*c^2 + 589824*a^2*b*c^5 + \\
& 589824*a^3*b*c^4 + 196608*a^4*b*c^3 + 147456*a^2*b^2*c^4 - 344064*a^2*b^3*c \\
& ^3 + 98304*a^3*b^2*c^3 - 49152*a^3*b^3*c^2 + 24576*a^4*b^2*c^2 + 196608*a*b \\
& *c^6 + \tan(x/2)*(-(8*a*c^3 - b*(-(4*a*c - b^2)^3)^{(1/2)} + b^4 + 8*a^2*c^2 - \\
& 2*b^2*c^2 - 6*a*b^2*c)/(2*(16*a^2*c^4 + b^4*c^2 - 8*a*b^2*c^3)))^{(1/2)}*(65 \\
& 536*a*c^8 - 131072*a^2*c^7 - 262144*a^3*c^6 + 131072*a^4*c^5 + 196608*a^5*c \\
& ^4 - 16384*b^2*c^7 + 49152*b^3*c^6 - 65536*b^4*c^5 + 65536*b^5*c^4 - 49152* \\
& b^6*c^3 + 16384*b^7*c^2 + 294912*a*b^2*c^6 - 409600*a*b^3*c^5 + 376832*a*b^ \\
& 4*c^4 - 114688*a*b^5*c^3 - 16384*a*b^6*c^2 + 589824*a^2*b*c^6 + 720896*a^3* \\
& b*c^5 - 65536*a^4*b*c^4 - 655360*a^2*b^2*c^5 + 16384*a^2*b^3*c^4 + 196608*a \\
& ^2*b^4*c^3 - 16384*a^2*b^5*c^2 - 557056*a^3*b^2*c^4 + 81920*a^3*b^3*c^3 + 1 \\
& 6384*a^3*b^4*c^2 - 114688*a^4*b^2*c^3 - 196608*a*b*c^7)))*(-(8*a*c^3 - b*(- \\
& (4*a*c - b^2)^3)^{(1/2)} + b^4 + 8*a^2*c^2 - 2*b^2*c^2 - 6*a*b^2*c)/(2*(16*a^ \\
& 2*c^4 + b^4*c^2 - 8*a*b^2*c^3)))^{(1/2)} + 147456*a*b^2*c^3 - 458752*a*b^3*c^ \\
& 2 + 802816*a^2*b*c^3 - 245760*a^2*b^3*c + 557056*a^3*b*c^2 - 16384*a^3*b^2* \\
& c + 98304*a^2*b^2*c^2 + 425984*a*b*c^4 + 106496*a*b^4*c + 122880*a^4*b*c)) * \\
& ((- (8*a*c^3 - b*(-(4*a*c - b^2)^3)^{(1/2)} + b^4 + 8*a^2*c^2 - 2*b^2*c^2 - 6*a \\
& *b^2*c)/(2*(16*a^2*c^4 + b^4*c^2 - 8*a*b^2*c^3)))^{(1/2)} * i) / ((\tan(x/2)*(573 \\
& 44*a^4*b - 57344*a*b^4 + 8192*a*c^4 + 8192*a^4*c + 57344*b*c^4 - 57344*b^4* \\
& c - 24576*a^5 + 24576*b^5 - 24576*c^5 + 49152*a^2*b^3 - 49152*a^3*b^2 + 147 \\
& 456*a^2*c^3 + 147456*a^3*c^2 - 49152*b^2*c^3 + 49152*b^3*c^2 + 245760*a*b^2 \\
& *c^2 - 442368*a^2*b*c^2 + 245760*a^2*b^2*c - 163840*a*b*c^3 - 32768*a*b^3*c \\
& - 163840*a^3*b*c) - ((8*a*c^3 - b*(-(4*a*c - b^2)^3)^{(1/2)} + b^4 + 8*a^2* \\
& c^2 - 2*b^2*c^2 - 6*a*b^2*c)/(2*(16*a^2*c^4 + b^4*c^2 - 8*a*b^2*c^3)))^{(1/2)} \\
& )*(32768*a*b^5 - 253952*a*c^5 - 24576*a^5*c + 57344*b*c^5 + 57344*b^5*c - 2 \\
& 4576*b^6 - 24576*c^6 + 16384*a^2*b^4 - 32768*a^3*b^3 + 8192*a^4*b^2 - 63897 \\
& 6*a^2*c^4 - 638976*a^3*c^3 - 253952*a^4*c^2 + 24576*b^2*c^4 - 114688*b^3*c^
\end{aligned}$$

$$\begin{aligned}
& 3 + 24576*b^4*c^2 - (\tan(x/2)*(16384*a*b^6 - 81920*a*c^6 + 49152*b*c^6 + 49152*b^6*c - 16384*b^7 - 16384*c^7 + 16384*a^2*b^5 - 16384*a^3*b^4 + 229376*a^2*c^5 + 491520*a^3*c^4 + 49152*a^4*c^3 - 147456*a^5*c^2 - 32768*b^2*c^5 - 32768*b^5*c^2 + 327680*a*b^3*c^3 - 425984*a*b^4*c^2 - 1015808*a^2*b*c^4 - 180224*a^2*b^4*c - 983040*a^3*b*c^3 - 65536*a^3*b^3*c + 49152*a^4*b*c^2 + 98304*a^4*b^2*c + 851968*a^2*b^2*c^3 + 131072*a^2*b^3*c^2 + 393216*a^3*b^2*c^2 + 65536*a*b*c^5 + 98304*a*b^5*c) - ((8*a*c^3 - b*(-(4*a*c - b^2)^3))^(1/2) + b^4 + 8*a^2*c^2 - 2*b^2*c^2 - 6*a*b^2*c)/(2*(16*a^2*c^4 + b^4*c^2 - 8*a*b^2*c^3)))^(1/2)*(24576*b^2*c^6 - 393216*a^2*c^6 - 589824*a^3*c^5 - 393216*a^4*c^4 - 98304*a^5*c^3 - 98304*a*c^7 - 49152*b^3*c^5 + 49152*b^5*c^3 - 24576*b^6*c^2 + 98304*a*b^2*c^5 - 344064*a*b^3*c^4 + 98304*a*b^4*c^3 + 49152*a*b^5*c^2 + 589824*a^2*b*c^5 + 589824*a^3*b*c^4 + 196608*a^4*b*c^3 + 147456*a^2*b^2*c^4 - 344064*a^2*b^3*c^3 + 98304*a^3*b^2*c^3 - 49152*a^3*b^3*c^2 + 24576*a^4*b^2*c^2 + 196608*a*b*c^6 + \tan(x/2)*(-(8*a*c^3 - b*(-(4*a*c - b^2)^3))^(1/2) + b^4 + 8*a^2*c^2 - 2*b^2*c^2 - 6*a*b^2*c)/(2*(16*a^2*c^4 + b^4*c^2 - 8*a*b^2*c^3)))^(1/2)*(65536*a*c^8 - 131072*a^2*c^7 - 262144*a^3*c^6 + 131072*a^4*c^5 + 196608*a^5*c^4 - 16384*b^2*c^7 + 49152*b^3*c^6 - 65536*b^4*c^5 + 65536*b^5*c^4 - 49152*b^6*c^3 + 16384*b^7*c^2 + 294912*a*b^2*c^6 - 409600*a*b^3*c^5 + 376832*a*b^4*c^4 - 114688*a*b^5*c^3 - 16384*a*b^6*c^2 + 589824*a^2*b*c^6 + 720896*a^3*b*c^5 - 65536*a^4*b*c^4 - 655360*a^2*b^2*c^5 + 16384*a^2*b^3*c^4 + 196608*a^2*b^4*c^3 - 16384*a^2*b^5*c^2 - 557056*a^3*b^2*c^4 + 81920*a^3*b^3*c^3 + 16384*a^3*b^4*c^2 - 114688*a^4*b^2*c^3 - 196608*a*b*c^7)))*(-(8*a*c^3 - b*(-(4*a*c - b^2)^3))^(1/2) + b^4 + 8*a^2*c^2 - 2*b^2*c^2 - 6*a*b^2*c)/(2*(16*a^2*c^4 + b^4*c^2 - 8*a*b^2*c^3)))^(1/2) + 147456*a*b^2*c^3 - 458752*a*b^3*c^2 + 802816*a^2*b*c^3 - 245760*a^2*b^3*c + 557056*a^3*b*c^2 - 16384*a^3*b^2*c + 98304*a^2*b^2*c^2 + 425984*a*b*c^4 + 106496*a*b^4*c + 122880*a^4*b*c))*(-(8*a*c^3 - b*(-(4*a*c - b^2)^3))^(1/2) + b^4 + 8*a^2*c^2 - 2*b^2*c^2 - 6*a*b^2*c)/(2*(16*a^2*c^4 + b^4*c^2 - 8*a*b^2*c^3)))^(1/2) - (\tan(x/2)*(57344*a^4*b - 57344*a*b^4 + 8192*a*c^4 + 8192*a^4*c + 57344*b*c^4 - 57344*b^4*c - 24576*a^5 + 24576*b^5 - 24576*c^5 + 49152*a^2*b^3 - 49152*a^3*b^2 + 147456*a^2*c^3 + 147456*a^3*c^2 - 49152*b^2*c^3 + 49152*b^3*c^2 + 245760*a*b^2*c^2 - 442368*a^2*b*c^2 + 245760*a^2*b^2*c - 163840*a*b*c^3 - 32768*a*b^3*c - 163840*a^3*b*c) + (-(8*a*c^3 - b*(-(4*a*c - b^2)^3))^(1/2) + b^4 + 8*a^2*c^2 - 2*b^2*c^2 - 6*a*b^2*c)/(2*(16*a^2*c^4 + b^4*c^2 - 8*a*b^2*c^3)))^(1/2)*(32768*a*b^5 - 253952*a*c^5 - 24576*a^5*c + 57344*b*c^5 + 57344*b^5*c - 24576*b^6 - 24576*c^6 + 16384*a^2*b^4 - 32768*a^3*b^3 + 8192*a^4*b^2 - 638976*a^2*c^4 - 638976*a^3*c^3 - 253952*a^4*c^2 + 24576*b^2*c^4 - 114688*b^3*c^3 + 24576*b^4*c^2 + (\tan(x/2)*(16384*a*b^6 - 81920*a*c^6 + 49152*b*c^6 + 49152*b^6*c - 16384*b^7 - 16384*c^7 + 16384*a^2*b^5 - 16384*a^3*b^4 + 229376*a^2*c^5 + 491520*a^3*c^4 + 49152*a^4*c^3 - 147456*a^5*c^2 - 32768*b^2*c^5 - 32768*b^5*c^2 + 327680*a*b^3*c^3 - 425984*a*b^4*c^2 - 1015808*a^2*b*c^4 - 180224*a^2*b^4*c - 983040*a^3*b*c^3 - 65536*a^3*b^3*c + 49152*a^4*b*c^2 + 98304*a^4*b^2*c + 851968*a^2*b^2*c^3 + 131072*a^2*b^3*c^2 + 393216*a^3*b^2*c^2 + 65536*a*b*c^5 + 98304*a*b^5*c) + (-(8*a*c^3 - b*(-(4*a*c - b^2)^3))^(1/2) + b^4 + 8*a^2*c^2 - 2*b^2*c^2 - 6*a*b^2*c)/
\end{aligned}$$

$$\begin{aligned}
& (2*(16*a^2*c^4 + b^4*c^2 - 8*a*b^2*c^3))^{(1/2)}*(24576*b^2*c^6 - 393216*a^2*c^6 - 589824*a^3*c^5 - 393216*a^4*c^4 - 98304*a^5*c^3 - 98304*a*c^7 - 49152*b^3*c^5 + 49152*b^5*c^3 - 24576*b^6*c^2 + 98304*a*b^2*c^5 - 344064*a*b^3*c^4 + 98304*a*b^4*c^3 + 49152*a*b^5*c^2 + 589824*a^2*b*c^5 + 589824*a^3*b*c^4 + 196608*a^4*b*c^3 + 147456*a^2*b^2*c^4 - 344064*a^2*b^3*c^3 + 98304*a^3*b^2*c^3 - 49152*a^3*b^3*c^2 + 24576*a^4*b^2*c^2 + 196608*a*b*c^6 - \tan(x/2))*(-8*a*c^3 - b*(-4*a*c - b^2)^3)^{(1/2)} + b^4 + 8*a^2*c^2 - 2*b^2*c^2 - 6*a*b^2*c)/(2*(16*a^2*c^4 + b^4*c^2 - 8*a*b^2*c^3))^{(1/2)}*(65536*a*c^8 - 131072*a^2*c^7 - 262144*a^3*c^6 + 131072*a^4*c^5 + 196608*a^5*c^4 - 16384*b^2*c^7 + 49152*b^3*c^6 - 65536*b^4*c^5 + 65536*b^5*c^4 - 49152*b^6*c^3 + 16384*b^7*c^2 + 294912*a*b^2*c^6 - 409600*a*b^3*c^5 + 376832*a*b^4*c^4 - 114688*a*b^5*c^3 - 16384*a*b^6*c^2 + 589824*a^2*b*c^6 + 720896*a^3*b*c^5 - 65536*a^4*b*c^4 - 655360*a^2*b^2*c^5 + 16384*a^2*b^3*c^4 + 196608*a^2*b^4*c^3 - 16384*a^2*b^5*c^2 - 557056*a^3*b^2*c^4 + 81920*a^3*b^3*c^3 + 16384*a^3*b^4*c^2 - 114688*a^4*b^2*c^3 - 196608*a*b*c^7)))*(-8*a*c^3 - b*(-4*a*c - b^2)^3)^{(1/2)} + b^4 + 8*a^2*c^2 - 2*b^2*c^2 - 6*a*b^2*c)/(2*(16*a^2*c^4 + b^4*c^2 - 8*a*b^2*c^3))^{(1/2)} + 147456*a*b^2*c^3 - 458752*a*b^3*c^2 + 802816*a^2*b*c^3 - 245760*a^2*b^3*c + 557056*a^3*b*c^2 - 16384*a^3*b^2*c + 98304*a^2*b^2*c^2 + 425984*a*b*c^4 + 106496*a*b^4*c + 122880*a^4*b*c))*(-8*a*c^3 - b*(-4*a*c - b^2)^3)^{(1/2)} + b^4 + 8*a^2*c^2 - 2*b^2*c^2 - 6*a*b^2*c)/(2*(16*a^2*c^4 + b^4*c^2 - 8*a*b^2*c^3))^{(1/2)} + 131072*a*b^3 - 131072*a^3*b + 262144*a*c^3 + 262144*a^3*c - 131072*b*c^3 + 131072*b^3*c + 65536*a^4 - 65536*b^4 + 65536*c^4 + 393216*a^2*c^2 - 393216*a*b*c^2 - 393216*a^2*b*c))*(-8*a*c^3 - b*(-4*a*c - b^2)^3)^{(1/2)} + b^4 + 8*a^2*c^2 - 2*b^2*c^2 - 6*a*b^2*c)/(2*(16*a^2*c^4 + b^4*c^2 - 8*a*b^2*c^3))^{(1/2)}*2i - (2*atan((344064*a^4*tan(x/2))/(163840*a^3*c - 196608*a^3*b - 49152*a*c^3 - 98304*a*b^3 - 16384*b*c^3 + 344064*a^4 - 16384*b^4 + 16384*c^4 - 98304*a^2*b^2 - 98304*a^2*c^2 + (147456*a^5)/c + (16384*b^5)/c + (16384*a*b^4)/c - (147456*a^4*b)/c - (32768*a*b^5)/c^2 + (196608*a^2*b^3)/c - (229376*a^3*b^2)/c + (32768*a^2*b^4)/c^2 + (32768*a^3*b^3)/c^2 - (32768*a^4*b^2)/c^2 + 65536*a*b*c^2 + 98304*a*b^2*c + 32768*a^2*b*c) - (16384*b^4*tan(x/2))/(163840*a^3*c - 196608*a^3*b - 49152*a*c^3 - 98304*a*b^3 - 16384*b*c^3 + 344064*a^4 - 16384*b^4 + 16384*c^4 - 98304*a^2*b^2 - 98304*a^2*c^2 + (147456*a^5)/c + (16384*b^5)/c + (16384*a*b^4)/c - (147456*a^4*b)/c - (32768*a*b^5)/c^2 + (196608*a^2*b^3)/c - (229376*a^3*b^2)/c + (32768*a^2*b^4)/c^2 + (32768*a^3*b^3)/c^2 - (32768*a^4*b^2)/c^2 + 65536*a*b*c^2 + 98304*a*b^2*c + 32768*a^2*b*c) + (16384*c^4*tan(x/2))/(163840*a^3*c - 196608*a^3*b - 49152*a*c^3 - 98304*a*b^3 - 16384*b*c^3 + 344064*a^4 - 16384*b^4 + 16384*c^4 - 98304*a^2*b^2 - 98304*a^2*c^2 + (147456*a^5)/c + (16384*b^5)/c + (16384*a*b^4)/c - (147456*a^4*b)/c - (32768*a*b^5)/c^2 + (196608*a^2*b^3)/c - (229376*a^3*b^2)/c + (32768*a^2*b^4)/c^2 + (32768*a^3*b^3)/c^2 - (32768*a^4*b^2)/c^2 + 65536*a*b*c^2 + 98304*a*b^2*c + 32768*a^2*b*c) + (147456*a^5*tan(x/2))/(16384*a*b^4 - 147456*a^4*b - 49152*a*c^4 + 344064*a^4*c - 16384*b*c^4 - 16384*b^4*c + 147456*a^5 + 16384*b^5 + 16384*c^5 + 196608*a^2*b^3 - 229376*a^3*b^2 - 98304*a^2*c^3 + 163840*a^3*c^2 + 98304*a*b^2*c^2 + 32768*a^2*b*c^2 - 98304*a^2*b^2*c - (32768*a*b^5
\end{aligned}$$

$$\begin{aligned}
& )/c + (32768*a^2*b^4)/c + (32768*a^3*b^3)/c - (32768*a^4*b^2)/c + 65536*a*b \\
& *c^3 - 98304*a*b^3*c - 196608*a^3*b*c) + (16384*b^5*\tan(x/2))/(16384*a*b^4 \\
& - 147456*a^4*b - 49152*a*c^4 + 344064*a^4*c - 16384*b*c^4 - 16384*b^4*c + 1 \\
& 47456*a^5 + 16384*b^5 + 16384*c^5 + 196608*a^2*b^3 - 229376*a^3*b^2 - 98304 \\
& *a^2*c^3 + 163840*a^3*c^2 + 98304*a*b^2*c^2 + 32768*a^2*b*c^2 - 98304*a^2*b \\
& ^2*c - (32768*a*b^5)/c + (32768*a^2*b^4)/c + (32768*a^3*b^3)/c - (32768*a^4 \\
& *b^2)/c + 65536*a*b*c^3 - 98304*a*b^3*c - 196608*a^3*b*c) - (98304*a^2*b^2* \\
& \tan(x/2))/(163840*a^3*c - 196608*a^3*b - 49152*a*c^3 - 98304*a*b^3 - 16384* \\
& b*c^3 + 344064*a^4 - 16384*b^4 + 16384*c^4 - 98304*a^2*b^2 - 98304*a^2*c^2 \\
& + (147456*a^5)/c + (16384*b^5)/c + (16384*a*b^4)/c - (147456*a^4*b)/c - (32 \\
& 768*a*b^5)/c^2 + (196608*a^2*b^3)/c - (229376*a^3*b^2)/c + (32768*a^2*b^4)/ \\
& c^2 + (32768*a^3*b^3)/c^2 - (32768*a^4*b^2)/c^2 + 65536*a*b*c^2 + 98304*a*b \\
& ^2*c + 32768*a^2*b*c) - (98304*a^2*c^2*\tan(x/2))/(163840*a^3*c - 196608*a^3 \\
& *b - 49152*a*c^3 - 98304*a*b^3 - 16384*b*c^3 + 344064*a^4 - 16384*b^4 + 163 \\
& 84*c^4 - 98304*a^2*b^2 - 98304*a^2*c^2 + (147456*a^5)/c + (16384*b^5)/c + ( \\
& 16384*a*b^4)/c - (147456*a^4*b)/c - (32768*a*b^5)/c^2 + (196608*a^2*b^3)/c \\
& - (229376*a^3*b^2)/c + (32768*a^2*b^4)/c^2 + (32768*a^3*b^3)/c^2 - (32768*a \\
& ^4*b^2)/c^2 + 65536*a*b*c^2 + 98304*a*b^2*c + 32768*a^2*b*c) + (16384*a*b^4 \\
& *\tan(x/2))/(16384*a*b^4 - 147456*a^4*b - 49152*a*c^4 + 344064*a^4*c - 16384 \\
& *b*c^4 - 16384*b^4*c + 147456*a^5 + 16384*b^5 + 16384*c^5 + 196608*a^2*b^3 \\
& - 229376*a^3*b^2 - 98304*a^2*c^3 + 163840*a^3*c^2 + 98304*a*b^2*c^2 + 32768 \\
& *a^2*b*c^2 - 98304*a^2*b^2*c - (32768*a*b^5)/c + (32768*a^2*b^4)/c + (32768 \\
& *a^3*b^3)/c - (32768*a^4*b^2)/c + 65536*a*b*c^3 - 98304*a*b^3*c - 196608*a^ \\
& 3*b*c) - (147456*a^4*b*\tan(x/2))/(16384*a*b^4 - 147456*a^4*b - 49152*a*c^4 \\
& + 344064*a^4*c - 16384*b*c^4 - 16384*b^4*c + 147456*a^5 + 16384*b^5 + 16384 \\
& *c^5 + 196608*a^2*b^3 - 229376*a^3*b^2 - 98304*a^2*c^3 + 163840*a^3*c^2 + 9 \\
& 8304*a*b^2*c^2 + 32768*a^2*b*c^2 - 98304*a^2*b^2*c - (32768*a*b^5)/c + (327 \\
& 68*a^2*b^4)/c + (32768*a^3*b^3)/c - (32768*a^4*b^2)/c + 65536*a*b*c^3 - 983 \\
& 04*a*b^3*c - 196608*a^3*b*c) - (32768*a*b^5*\tan(x/2))/(147456*a^5*c - 49152 \\
& *a*c^5 - 32768*a*b^5 - 16384*b*c^5 + 16384*b^5*c + 16384*c^6 + 32768*a^2*b^ \\
& 4 + 32768*a^3*b^3 - 32768*a^4*b^2 - 98304*a^2*c^4 + 163840*a^3*c^3 + 344064 \\
& *a^4*c^2 - 16384*b^4*c^2 + 98304*a*b^2*c^3 - 98304*a*b^3*c^2 + 32768*a^2*b* \\
& c^3 + 196608*a^2*b^3*c - 196608*a^3*b*c^2 - 229376*a^3*b^2*c - 98304*a^2*b^ \\
& 2*c^2 + 65536*a*b*c^4 + 16384*a*b^4*c - 147456*a^4*b*c) + (196608*a^2*b^3*t \\
& \tan(x/2))/(16384*a*b^4 - 147456*a^4*b - 49152*a*c^4 + 344064*a^4*c - 16384*b \\
& *c^4 - 16384*b^4*c + 147456*a^5 + 16384*b^5 + 16384*c^5 + 196608*a^2*b^3 - \\
& 229376*a^3*b^2 - 98304*a^2*c^3 + 163840*a^3*c^2 + 98304*a*b^2*c^2 + 32768*a \\
& ^2*b*c^2 - 98304*a^2*b^2*c - (32768*a*b^5)/c + (32768*a^2*b^4)/c + (32768*a \\
& ^3*b^3)/c - (32768*a^4*b^2)/c + 65536*a*b*c^3 - 98304*a*b^3*c - 196608*a^3* \\
& b*c) - (229376*a^3*b^2*\tan(x/2))/(16384*a*b^4 - 147456*a^4*b - 49152*a*c^4 \\
& + 344064*a^4*c - 16384*b*c^4 - 16384*b^4*c + 147456*a^5 + 16384*b^5 + 16384 \\
& *c^5 + 196608*a^2*b^3 - 229376*a^3*b^2 - 98304*a^2*c^3 + 163840*a^3*c^2 + 9 \\
& 8304*a*b^2*c^2 + 32768*a^2*b*c^2 - 98304*a^2*b^2*c - (32768*a*b^5)/c + (327 \\
& 68*a^2*b^4)/c + (32768*a^3*b^3)/c - (32768*a^4*b^2)/c + 65536*a*b*c^3 - 983 \\
& 04*a*b^3*c - 196608*a^3*b*c) - (98304*a*b^3*\tan(x/2))/(163840*a^3*c - 19660
\end{aligned}$$

$$\begin{aligned}
& 8a^3b - 49152a^3c^3 - 98304a^3b^3 - 16384b^3c^3 + 344064a^4 - 16384b^4 \\
& + 16384c^4 - 98304a^2b^2 - 98304a^2c^2 + (147456a^5)/c + (16384b^5)/ \\
& c + (16384ab^4)/c - (147456a^4b)/c - (32768ab^5)/c^2 + (196608a^2b^ \\
& 3)/c - (229376a^3b^2)/c + (32768a^2b^4)/c^2 + (32768a^3b^3)/c^2 - (32 \\
& 768a^4b^2)/c^2 + 65536ab^3c^2 + 98304a^2b^2c + 32768a^2b^3c - (196608 \\
& a^3b \tan(x/2))/(163840a^3c - 196608a^3b - 49152a^3c^3 - 98304a^3b^3 - \\
& 16384b^3c^3 + 344064a^4 - 16384b^4 + 16384c^4 - 98304a^2b^2 - 98304a \\
& ^2c^2 + (147456a^5)/c + (16384b^5)/c + (16384ab^4)/c - (147456a^4b)/ \\
& c - (32768ab^5)/c^2 + (196608a^2b^3)/c - (229376a^3b^2)/c + (32768a^ \\
& 2b^4)/c^2 + (32768a^3b^3)/c^2 - (32768a^4b^2)/c^2 + 65536ab^3c^2 + 98 \\
& 304a^2b^2c + 32768a^2b^3c - (49152a^3c^3 \tan(x/2))/(163840a^3c - 19660 \\
& 8a^3b - 49152a^3c^3 - 98304a^3b^3 - 16384b^3c^3 + 344064a^4 - 16384b^4 \\
& + 16384c^4 - 98304a^2b^2 - 98304a^2c^2 + (147456a^5)/c + (16384b^5)/ \\
& c + (16384ab^4)/c - (147456a^4b)/c - (32768ab^5)/c^2 + (196608a^2b^ \\
& 3)/c - (229376a^3b^2)/c + (32768a^2b^4)/c^2 + (32768a^3b^3)/c^2 - (32 \\
& 768a^4b^2)/c^2 + 65536ab^3c^2 + 98304a^2b^2c + 32768a^2b^3c + (163840 \\
& a^3c \tan(x/2))/(163840a^3c - 196608a^3b - 49152a^3c^3 - 98304a^3b^3 - \\
& 16384b^3c^3 + 344064a^4 - 16384b^4 + 16384c^4 - 98304a^2b^2 - 98304a \\
& ^2c^2 + (147456a^5)/c + (16384b^5)/c + (16384ab^4)/c - (147456a^4b)/ \\
& c - (32768ab^5)/c^2 + (196608a^2b^3)/c - (229376a^3b^2)/c + (32768a^ \\
& 2b^4)/c^2 + (32768a^3b^3)/c^2 - (32768a^4b^2)/c^2 + 65536ab^3c^2 + 98 \\
& 304a^2b^2c + 32768a^2b^3c - (16384b^3c^3 \tan(x/2))/(163840a^3c - 19660 \\
& 8a^3b - 49152a^3c^3 - 98304a^3b^3 - 16384b^3c^3 + 344064a^4 - 16384b^4 \\
& + 16384c^4 - 98304a^2b^2 - 98304a^2c^2 + (147456a^5)/c + (16384b^5)/ \\
& c + (16384ab^4)/c - (147456a^4b)/c - (32768ab^5)/c^2 + (196608a^2b^ \\
& 3)/c - (229376a^3b^2)/c + (32768a^2b^4)/c^2 + (32768a^3b^3)/c^2 - (32 \\
& 768a^4b^2)/c^2 + 65536ab^3c^2 + 98304a^2b^2c + 32768a^2b^3c + (32768 \\
& a^2b^4 \tan(x/2))/(147456a^5c - 49152a^3c^5 - 32768ab^5 - 16384b^3c^5 + \\
& 16384b^5c + 16384c^6 + 32768a^2b^4 + 32768a^3b^3 - 32768a^4b^2 - \\
& 98304a^2c^4 + 163840a^3c^3 + 344064a^4c^2 - 16384b^4c^2 + 98304ab \\
& ^2c^3 - 98304ab^3c^2 + 32768a^2b^3c^3 + 196608a^2b^3c - 196608a^3 \\
& b^3c^2 - 229376a^3b^2c - 98304a^2b^2c^2 + 65536ab^3c^4 + 16384ab^4 \\
& c - 147456a^4b^3c) + (32768a^3b^3 \tan(x/2))/(147456a^5c - 49152a^3c^5 \\
& - 32768ab^5 - 16384b^3c^5 + 16384b^5c + 16384c^6 + 32768a^2b^4 + 327 \\
& 68a^3b^3 - 32768a^4b^2 - 98304a^2c^4 + 163840a^3c^3 + 344064a^4c^2 \\
& - 16384b^4c^2 + 98304ab^2c^3 - 98304ab^3c^2 + 32768a^2b^3c^3 + 1 \\
& 96608a^2b^3c - 196608a^3b^3c^2 - 229376a^3b^2c - 98304a^2b^2c^2 + \\
& 65536ab^3c^4 + 16384ab^4c - 147456a^4b^3c) - (32768a^4b^2 \tan(x/2)) \\
& / (147456a^5c - 49152a^3c^5 - 32768ab^5 - 16384b^3c^5 + 16384b^5c + 16 \\
& 384c^6 + 32768a^2b^4 + 32768a^3b^3 - 32768a^4b^2 - 98304a^2c^4 + 1 \\
& 63840a^3c^3 + 344064a^4c^2 - 16384b^4c^2 + 98304ab^2c^3 - 98304ab \\
& ^3c^2 + 32768a^2b^3c^3 + 196608a^2b^3c - 196608a^3b^3c^2 - 229376a^ \\
& 3b^2c - 98304a^2b^2c^2 + 65536ab^3c^4 + 16384ab^4c - 147456a^4b^3 \\
& c) + (65536ab^3c^2 \tan(x/2))/(163840a^3c - 196608a^3b - 49152a^3c^3 - \\
& 98304ab^3 - 16384b^3c^3 + 344064a^4 - 16384b^4 + 16384c^4 - 98304a^2*
\end{aligned}$$

$$\begin{aligned}
& b^2 - 98304a^2c^2 + (147456a^5)/c + (16384b^5)/c + (16384ab^4)/c - (147456a^4b)/c - (32768ab^5)/c^2 + (196608a^2b^3)/c - (229376a^3b^2)/c \\
& + (32768a^2b^4)/c^2 + (32768a^3b^3)/c^2 - (32768a^4b^2)/c^2 + 65536ab^2c^2 + 98304ab^2c + 32768a^2b^2c + (98304ab^2c \tan(x/2))/(163840a^3c - 196608a^3b - 49152a^2c^3 - 98304ab^3 - 16384b^2c^3 + 344064a^4 - 16384b^4 + 16384c^4 - 98304a^2b^2 - 98304a^2c^2 + (147456a^5)/c + (16384b^5)/c + (16384ab^4)/c - (147456a^4b)/c - (32768ab^5)/c^2 + (196608a^2b^3)/c - (229376a^3b^2)/c + (32768a^2b^4)/c^2 + (32768a^3b^3)/c^2 - (32768a^4b^2)/c^2 + 65536ab^2c^2 + 98304ab^2c + 32768a^2b^2c + (32768a^2b^2c \tan(x/2))/(163840a^3c - 196608a^3b - 49152a^2c^3 - 98304ab^3 - 16384b^2c^3 + 344064a^4 - 16384b^4 + 16384c^4 - 98304a^2b^2 - 98304a^2c^2 + (147456a^5)/c + (16384b^5)/c + (16384ab^4)/c - (147456a^4b)/c - (32768ab^5)/c^2 + (196608a^2b^3)/c - (229376a^3b^2)/c + (32768a^2b^4)/c^2 + (32768a^3b^3)/c^2 - (32768a^4b^2)/c^2 + 65536ab^2c^2 + 98304ab^2c + 32768a^2b^2c)))/c
\end{aligned}$$

### 3.8 $\int \frac{\csc^2(x)}{a+b \cos(x)+c \cos^2(x)} dx$

Optimal result	119
Rubi [A] (verified)	120
Mathematica [A] (verified)	122
Maple [A] (verified)	123
Fricas [B] (verification not implemented)	123
Sympy [F]	124
Maxima [F]	124
Giac [B] (verification not implemented)	125
Mupad [B] (verification not implemented)	136

#### Optimal result

Integrand size = 19, antiderivative size = 326

$$\int \frac{\csc^2(x)}{a+b \cos(x)+c \cos^2(x)} dx$$

$$= -\frac{2bc \left(1 + \frac{b^2-2c(a+c)}{b\sqrt{b^2-4ac}}\right) \arctan\left(\frac{\sqrt{b-2c-\sqrt{b^2-4ac}} \tan\left(\frac{x}{2}\right)}{\sqrt{b+2c-\sqrt{b^2-4ac}}}\right)}{(a-b+c)(a+b+c)\sqrt{b-2c-\sqrt{b^2-4ac}}\sqrt{b+2c-\sqrt{b^2-4ac}}}$$

$$- \frac{2bc \left(1 - \frac{b^2-2c(a+c)}{b\sqrt{b^2-4ac}}\right) \arctan\left(\frac{\sqrt{b-2c+\sqrt{b^2-4ac}} \tan\left(\frac{x}{2}\right)}{\sqrt{b+2c+\sqrt{b^2-4ac}}}\right)}{(a-b+c)(a+b+c)\sqrt{b-2c+\sqrt{b^2-4ac}}\sqrt{b+2c+\sqrt{b^2-4ac}}}$$

$$- \frac{\sin(x)}{2(a+b+c)(1-\cos(x))} + \frac{\sin(x)}{2(a-b+c)(1+\cos(x))}$$

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

**Rubi [A] (verified)**

Time = 3.46 (sec) , antiderivative size = 326, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 5,  $\frac{\text{number of rules}}{\text{integrand size}} = 0.263$ , Rules used = {3348, 2727, 3374, 2738, 211}

$$\int \frac{\csc^2(x)}{a + b \cos(x) + c \cos^2(x)} dx$$

$$= -\frac{2bc \left( \frac{b^2 - 2c(a+c)}{b\sqrt{b^2 - 4ac}} + 1 \right) \arctan \left( \frac{\tan(\frac{x}{2}) \sqrt{-\sqrt{b^2 - 4ac} + b - 2c}}{\sqrt{-\sqrt{b^2 - 4ac} + b + 2c}} \right)}{(a - b + c)(a + b + c) \sqrt{-\sqrt{b^2 - 4ac} + b - 2c} \sqrt{-\sqrt{b^2 - 4ac} + b + 2c}}$$

$$- \frac{2bc \left( 1 - \frac{b^2 - 2c(a+c)}{b\sqrt{b^2 - 4ac}} \right) \arctan \left( \frac{\tan(\frac{x}{2}) \sqrt{\sqrt{b^2 - 4ac} + b - 2c}}{\sqrt{\sqrt{b^2 - 4ac} + b + 2c}} \right)}{(a - b + c)(a + b + c) \sqrt{\sqrt{b^2 - 4ac} + b - 2c} \sqrt{\sqrt{b^2 - 4ac} + b + 2c}}$$

$$- \frac{\sin(x)}{2(1 - \cos(x))(a + b + c)} + \frac{\sin(x)}{2(\cos(x) + 1)(a - b + c)}$$

[In] Int[Csc[x]^2/(a + b\*Cos[x] + c\*Cos[x]^2),x]

[Out] (-2\*b\*c\*(1 + (b^2 - 2\*c\*(a + c))/(b\*Sqrt[b^2 - 4\*a\*c]))\*ArcTan[(Sqrt[b - 2\*c - Sqrt[b^2 - 4\*a\*c]]\*Tan[x/2])/Sqrt[b + 2\*c - Sqrt[b^2 - 4\*a\*c]]]/((a - b + c)\*(a + b + c)\*Sqrt[b - 2\*c - Sqrt[b^2 - 4\*a\*c]]\*Sqrt[b + 2\*c - Sqrt[b^2 - 4\*a\*c]]) - (2\*b\*c\*(1 - (b^2 - 2\*c\*(a + c))/(b\*Sqrt[b^2 - 4\*a\*c]))\*ArcTan[(Sqrt[b - 2\*c + Sqrt[b^2 - 4\*a\*c]]\*Tan[x/2])/Sqrt[b + 2\*c + Sqrt[b^2 - 4\*a\*c]]]/((a - b + c)\*(a + b + c)\*Sqrt[b - 2\*c + Sqrt[b^2 - 4\*a\*c]]\*Sqrt[b + 2\*c + Sqrt[b^2 - 4\*a\*c]]) - Sin[x]/(2\*(a + b + c)\*(1 - Cos[x])) + Sin[x]/(2\*(a - b + c)\*(1 + Cos[x]))

Rule 211

Int[((a\_) + (b\_.)\*(x\_)^2)^(-1), x\_Symbol] := Simp[(Rt[a/b, 2]/a)\*ArcTan[x/Rt[a/b, 2]], x] /; FreeQ[{a, b}, x] && PosQ[a/b]

Rule 2727

Int[((a\_) + (b\_.)\*sin[(c\_.) + (d\_.)\*(x\_)])^(-1), x\_Symbol] := Simp[-Cos[c + d\*x]/(d\*(b + a\*sin[c + d\*x])), x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 - b^2, 0]

Rule 2738

Int[((a\_) + (b\_.)\*sin[Pi/2 + (c\_.) + (d\_.)\*(x\_)])^(-1), x\_Symbol] := With[{e = FreeFactors[Tan[(c + d\*x)/2], x]}, Dist[2\*(e/d), Subst[Int[1/(a + b + (a - b)\*e^2\*x^2), x], x, Tan[(c + d\*x)/2]/e], x] /; FreeQ[{a, b, c, d}, x] && NeQ[a^2 - b^2, 0]



## Rule 3348

```
Int[((a_.) + cos[(d_.) + (e_.)*(x_)])^(n_.)*(b_.) + cos[(d_.) + (e_.)*(x_)])^(n2_.)*(c_.))^(p_.)*sin[(d_.) + (e_.)*(x_)])^(m_.), x_Symbol] := Int[ExpandTrig[(1 - cos[d + e*x]^2)^(m/2)*(a + b*cos[d + e*x]^n + c*cos[d + e*x]^(2*n))^p, x], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[n2, 2*n] && IntegerQ[m/2] && NeQ[b^2 - 4*a*c, 0] && IntegersQ[n, p]
```

## Rule 3374

```
Int[(cos[(d_.) + (e_.)*(x_)]*(B_.) + (A_.))/((a_.) + cos[(d_.) + (e_.)*(x_)])*(b_.) + cos[(d_.) + (e_.)*(x_)])^2*(c_.)), x_Symbol] := Module[{q = Rt[b^2 - 4*a*c, 2]}, Dist[B + (b*B - 2*A*c)/q, Int[1/(b + q + 2*c*Cos[d + e*x]), x], x] + Dist[B - (b*B - 2*A*c)/q, Int[1/(b - q + 2*c*Cos[d + e*x]), x], x] /; FreeQ[{a, b, c, d, e, A, B}, x] && NeQ[b^2 - 4*a*c, 0]
```

## Rubi steps

$$\begin{aligned}
\text{integral} &= \int \left( -\frac{1}{2(a+b+c)(-1+\cos(x))} + \frac{1}{2(a-b+c)(1+\cos(x))} \right. \\
&\quad \left. + \frac{-b^2\left(1 - \frac{c(a+c)}{b^2}\right) - bc \cos(x)}{(a-b+c)(a+b+c)(a+b\cos(x)+c\cos^2(x))} \right) dx \\
&= \frac{\int \frac{1}{1+\cos(x)} dx}{2(a-b+c)} - \frac{\int \frac{1}{-1+\cos(x)} dx}{2(a+b+c)} + \frac{\int \frac{-b^2\left(1 - \frac{c(a+c)}{b^2}\right) - bc \cos(x)}{a+b\cos(x)+c\cos^2(x)} dx}{(a-b+c)(a+b+c)} \\
&= -\frac{\sin(x)}{2(a+b+c)(1-\cos(x))} + \frac{\sin(x)}{2(a-b+c)(1+\cos(x))} \\
&\quad - \frac{\left(c\left(b + \frac{b^2-2c(a+c)}{\sqrt{b^2-4ac}}\right)\right) \int \frac{1}{b-\sqrt{b^2-4ac}+2c\cos(x)} dx}{(a-b+c)(a+b+c)} \\
&\quad - \frac{\left(bc\left(1 - \frac{b^2-2c(a+c)}{b\sqrt{b^2-4ac}}\right)\right) \int \frac{1}{b+\sqrt{b^2-4ac}+2c\cos(x)} dx}{(a-b+c)(a+b+c)} \\
&= -\frac{\sin(x)}{2(a+b+c)(1-\cos(x))} + \frac{\sin(x)}{2(a-b+c)(1+\cos(x))} \\
&\quad - \frac{\left(2c\left(b + \frac{b^2-2c(a+c)}{\sqrt{b^2-4ac}}\right)\right) \text{Subst}\left(\int \frac{1}{b+2c-\sqrt{b^2-4ac}+(b-2c-\sqrt{b^2-4ac})x^2} dx, x, \tan\left(\frac{x}{2}\right)\right)}{(a-b+c)(a+b+c)} \\
&\quad - \frac{\left(2bc\left(1 - \frac{b^2-2c(a+c)}{b\sqrt{b^2-4ac}}\right)\right) \text{Subst}\left(\int \frac{1}{b+2c+\sqrt{b^2-4ac}+(b-2c+\sqrt{b^2-4ac})x^2} dx, x, \tan\left(\frac{x}{2}\right)\right)}{(a-b+c)(a+b+c)}
\end{aligned}$$

$$\begin{aligned}
&= \frac{2c \left( b + \frac{b^2 - 2c(a+c)}{\sqrt{b^2 - 4ac}} \right) \arctan \left( \frac{\sqrt{b-2c-\sqrt{b^2-4ac}} \tan\left(\frac{x}{2}\right)}{\sqrt{b+2c-\sqrt{b^2-4ac}}} \right)}{(a-b+c)(a+b+c)\sqrt{b-2c-\sqrt{b^2-4ac}}\sqrt{b+2c-\sqrt{b^2-4ac}}} \\
&\quad - \frac{2bc \left( 1 - \frac{b^2 - 2c(a+c)}{b\sqrt{b^2-4ac}} \right) \arctan \left( \frac{\sqrt{b-2c+\sqrt{b^2-4ac}} \tan\left(\frac{x}{2}\right)}{\sqrt{b+2c+\sqrt{b^2-4ac}}} \right)}{(a-b+c)(a+b+c)\sqrt{b-2c+\sqrt{b^2-4ac}}\sqrt{b+2c+\sqrt{b^2-4ac}}} \\
&\quad - \frac{\sin(x)}{2(a+b+c)(1-\cos(x))} + \frac{\sin(x)}{2(a-b+c)(1+\cos(x))}
\end{aligned}$$

### Mathematica [A] (verified)

Time = 0.70 (sec) , antiderivative size = 335, normalized size of antiderivative = 1.03

$$\begin{aligned}
&\int \frac{\csc^2(x)}{a+b\cos(x)+c\cos^2(x)} dx \\
&= \frac{\sqrt{2c(-b^2+2c(a+c)+b\sqrt{b^2-4ac})} \operatorname{arctanh} \left( \frac{(b-2c+\sqrt{b^2-4ac}) \tan\left(\frac{x}{2}\right)}{\sqrt{-2b^2+4c(a+c)-2b\sqrt{b^2-4ac}}} \right)}{\sqrt{b^2-4ac}(a^2-b^2+2ac+c^2)\sqrt{-b^2+2c(a+c)-b\sqrt{b^2-4ac}}} \\
&\quad - \frac{\sqrt{2c(b^2-2c(a+c)+b\sqrt{b^2-4ac})} \operatorname{arctanh} \left( \frac{(-b+2c+\sqrt{b^2-4ac}) \tan\left(\frac{x}{2}\right)}{\sqrt{-2b^2+4c(a+c)+2b\sqrt{b^2-4ac}}} \right)}{\sqrt{b^2-4ac}(a^2-b^2+2ac+c^2)\sqrt{-b^2+2c(a+c)+b\sqrt{b^2-4ac}}} \\
&\quad - \frac{\cot\left(\frac{x}{2}\right)}{2(a+b+c)} + \frac{\tan\left(\frac{x}{2}\right)}{2(a-b+c)}
\end{aligned}$$

[In] Integrate[Csc[x]^2/(a + b\*Cos[x] + c\*Cos[x]^2),x]

[Out] (Sqrt[2]\*c\*(-b^2 + 2\*c\*(a + c) + b\*Sqrt[b^2 - 4\*a\*c])\*ArcTanh[((b - 2\*c + Sqrt[b^2 - 4\*a\*c])\*Tan[x/2])/Sqrt[-2\*b^2 + 4\*c\*(a + c) - 2\*b\*Sqrt[b^2 - 4\*a\*c]]])/(Sqrt[b^2 - 4\*a\*c]\*(a^2 - b^2 + 2\*a\*c + c^2)\*Sqrt[-b^2 + 2\*c\*(a + c) - b\*Sqrt[b^2 - 4\*a\*c]]) - (Sqrt[2]\*c\*(b^2 - 2\*c\*(a + c) + b\*Sqrt[b^2 - 4\*a\*c])\*ArcTanh[((-b + 2\*c + Sqrt[b^2 - 4\*a\*c])\*Tan[x/2])/Sqrt[-2\*b^2 + 4\*c\*(a + c) + 2\*b\*Sqrt[b^2 - 4\*a\*c]]])/(Sqrt[b^2 - 4\*a\*c]\*(a^2 - b^2 + 2\*a\*c + c^2)\*Sqrt[-b^2 + 2\*c\*(a + c) + b\*Sqrt[b^2 - 4\*a\*c]]) - Cot[x/2]/(2\*(a + b + c)) + Tan[x/2]/(2\*(a - b + c))

**Maple [A] (verified)**

Time = 11.98 (sec) , antiderivative size = 393, normalized size of antiderivative = 1.21

method	result
default	$\frac{\tan\left(\frac{x}{2}\right)}{2a-2b+2c} + \frac{(4a-4b+4c) \left( \frac{(\sqrt{-4ac+b^2} ac - \sqrt{-4ac+b^2} b^2 + \sqrt{-4ac+b^2} bc + \sqrt{-4ac+b^2} c^2 - 3cab + 2a c^2 + b^3 - b^2 c - b c^2 + 2c^3) \operatorname{arctanh}\left(\frac{(\sqrt{-4ac+b^2} a - \sqrt{-4ac+b^2} a + c)}{\sqrt{(\sqrt{-4ac+b^2} a - \sqrt{-4ac+b^2} a + c)(a-b+c)}}\right)}{2\sqrt{-4ac+b^2} (a-b+c) \sqrt{(\sqrt{-4ac+b^2} a - \sqrt{-4ac+b^2} a + c)(a-b+c)}} \right)}{2\sqrt{-4ac+b^2} (a-b+c) \sqrt{(\sqrt{-4ac+b^2} a - \sqrt{-4ac+b^2} a + c)(a-b+c)}}$
risch	Expression too large to display

```
[In] int(csc(x)^2/(a+cos(x)*b+c*cos(x)^2),x,method=_RETURNVERBOSE)
```

```
[Out] 1/2/(a-b+c)*tan(1/2*x)+1/2/(a+b+c)/(a-b+c)*(4*a-4*b+4*c)*(1/2*((-4*a*c+b^2)^(1/2)*a*c-(-4*a*c+b^2)^(1/2)*b^2+(-4*a*c+b^2)^(1/2)*b*c+(-4*a*c+b^2)^(1/2)*c^2-3*c*a*b+2*a*c^2+b^3-b^2*c-b*c^2+2*c^3)/(-4*a*c+b^2)^(1/2)/(a-b+c)/(((4*a*c+b^2)^(1/2)-a+c)*(a-b+c))^(1/2)*arctanh((-a+b-c)*tan(1/2*x)/(((4*a*c+b^2)^(1/2)-a+c)*(a-b+c))^(1/2))+1/2*((-4*a*c+b^2)^(1/2)*a*c-(-4*a*c+b^2)^(1/2)*b^2+(-4*a*c+b^2)^(1/2)*b*c+(-4*a*c+b^2)^(1/2)*c^2+3*c*a*b-2*a*c^2-b^3+b^2*c+b*c^2-2*c^3)/(-4*a*c+b^2)^(1/2)/(a-b+c)/(((4*a*c+b^2)^(1/2)+a-c)*(a-b+c))^(1/2)*arctan((a-b+c)*tan(1/2*x)/(((4*a*c+b^2)^(1/2)+a-c)*(a-b+c))^(1/2))-1/2/(a+b+c)/tan(1/2*x)
```

**Fricas [B] (verification not implemented)**

Leaf count of result is larger than twice the leaf count of optimal. 16741 vs. 2(279) = 558.

Time = 3.38 (sec) , antiderivative size = 16741, normalized size of antiderivative = 51.35

$$\int \frac{\csc^2(x)}{a + b \cos(x) + c \cos^2(x)} dx = \text{Too large to display}$$

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

```
[Out] Too large to include
```

## Sympy [F]

$$\int \frac{\csc^2(x)}{a + b \cos(x) + c \cos^2(x)} dx = \int \frac{\csc^2(x)}{a + b \cos(x) + c \cos^2(x)} dx$$

[In] integrate(csc(x)\*\*2/(a+b\*cos(x)+c\*cos(x)\*\*2),x)

[Out] Integral(csc(x)\*\*2/(a + b\*cos(x) + c\*cos(x)\*\*2), x)

## Maxima [F]

$$\int \frac{\csc^2(x)}{a + b \cos(x) + c \cos^2(x)} dx = \int \frac{\csc(x)^2}{c \cos(x)^2 + b \cos(x) + a} dx$$

[In] integrate(csc(x)^2/(a+b\*cos(x)+c\*cos(x)^2),x, algorithm="maxima")

[Out]  $-(2*b*\cos(2*x)*\sin(x) + ((a^2 - b^2 + 2*a*c + c^2)*\cos(2*x)^2 + (a^2 - b^2 + 2*a*c + c^2)*\sin(2*x)^2 + a^2 - b^2 + 2*a*c + c^2 - 2*(a^2 - b^2 + 2*a*c + c^2)*\cos(2*x))*\integrate(2*(2*b^2*c*\cos(3*x)^2 + 2*b^2*c*\cos(x)^2 + 2*b^2*c*\sin(3*x)^2 + 2*b^2*c*\sin(x)^2 + b*c^2*\cos(x) + 4*(2*a*b^2 - 3*a*c^2 - c^3 - (2*a^2 - b^2)*c)*\cos(2*x)^2 + 4*(2*a*b^2 - 3*a*c^2 - c^3 - (2*a^2 - b^2)*c)*\sin(2*x)^2 + 2*(2*b^3 - b*c^2)*\sin(2*x)*\sin(x) + (b*c^2*\cos(3*x) + b*c^2*\cos(x) + 2*(b^2*c - a*c^2 - c^3)*\cos(2*x))*\cos(4*x) + (4*b^2*c*\cos(x) + b*c^2 + 2*(2*b^3 - b*c^2)*\cos(2*x))*\cos(3*x) + 2*(b^2*c - a*c^2 - c^3 + (2*b^3 - b*c^2)*\cos(x))*\cos(2*x) + (b*c^2*\sin(3*x) + b*c^2*\sin(x) + 2*(b^2*c - a*c^2 - c^3)*\sin(2*x))*\sin(4*x) + 2*(2*b^2*c*\sin(x) + (2*b^3 - b*c^2)*\sin(2*x))*\sin(3*x))/(2*a*c^3 + c^4 + (a^2 - b^2)*c^2 + (2*a*c^3 + c^4 + (a^2 - b^2)*c^2)*\cos(4*x)^2 + 4*(a^2*b^2 - b^4 + 2*a*b^2*c + b^2*c^2)*\cos(3*x)^2 + 4*(4*a^4 - 4*a^2*b^2 + 6*a*c^3 + c^4 + (13*a^2 - b^2)*c^2 + 4*(3*a^3 - a*b^2)*c)*\cos(2*x)^2 + 4*(a^2*b^2 - b^4 + 2*a*b^2*c + b^2*c^2)*\cos(x)^2 + (2*a*c^3 + c^4 + (a^2 - b^2)*c^2)*\sin(4*x)^2 + 4*(a^2*b^2 - b^4 + 2*a*b^2*c + b^2*c^2)*\sin(3*x)^2 + 4*(4*a^4 - 4*a^2*b^2 + 6*a*c^3 + c^4 + (13*a^2 - b^2)*c^2 + 4*(3*a^3 - a*b^2)*c)*\sin(2*x)^2 + 8*(2*a^3*b - 2*a*b^3 + 4*a*b*c^2 + b*c^3 + (5*a^2*b - b^3)*c)*\sin(2*x)*\sin(x) + 4*(a^2*b^2 - b^4 + 2*a*b^2*c + b^2*c^2)*\sin(x)^2 + 2*(2*a*c^3 + c^4 + (a^2 - b^2)*c^2 + 2*(2*a*b*c^2 + b*c^3 + (a^2*b - b^3)*c)*\cos(3*x) + 2*(4*a*c^3 + c^4 + (5*a^2 - b^2)*c^2 + 2*(a^3 - a*b^2)*c)*\cos(2*x) + 2*(2*a*b*c^2 + b*c^3 + (a^2*b - b^3)*c)*\cos(x))*\cos(4*x) + 4*(2*a*b*c^2 + b*c^3 + (a^2*b - b^3)*c + 2*(2*a^3*b - 2*a*b^3 + 4*a*b*c^2 + b*c^3 + (5*a^2*b - b^3)*c)*\cos(2*x) + 2*(a^2*b^2 - b^4 + 2*a*b^2*c + b^2*c^2)*\cos(x))*\cos(3*x) + 4*(4*a*c^3 + c^4 + (5*a^2 - b^2)*c^2 + 2*(a^3 - a*b^2)*c + 2*(2*a^3*b - 2*a*b^3 + 4*a*b*c^2 + b*c^3 + (5*a^2*b - b^3)*c)*\cos(x))*\cos(2*x) + 4*(2*a*b*c^2 + b*c^3 + (a^2*b - b^3)*c)*\cos(x) + 4*((2*a*b*c^2 + b*c^3 + (a^2*b - b^3)*c)*\sin(3*x) + (4*a*c^3 + c^4 + (5*a^2$

- b^2)\*c^2 + 2\*(a^3 - a\*b^2)\*c)\*sin(2\*x) + (2\*a\*b\*c^2 + b\*c^3 + (a^2\*b - b^3)\*c)\*sin(x))\*sin(4\*x) + 8\*((2\*a^3\*b - 2\*a\*b^3 + 4\*a\*b\*c^2 + b\*c^3 + (5\*a^2\*b - b^3)\*c)\*sin(2\*x) + (a^2\*b^2 - b^4 + 2\*a\*b^2\*c + b^2\*c^2)\*sin(x))\*sin(3\*x)), x) - 2\*(b\*cos(x) - a - c)\*sin(2\*x) - 2\*b\*sin(x))/((a^2 - b^2 + 2\*a\*c + c^2)\*cos(2\*x)^2 + (a^2 - b^2 + 2\*a\*c + c^2)\*sin(2\*x)^2 + a^2 - b^2 + 2\*a\*c + c^2 - 2\*(a^2 - b^2 + 2\*a\*c + c^2)\*cos(2\*x))

## Giac [B] (verification not implemented)

Leaf count of result is larger than twice the leaf count of optimal. 21750 vs. 2(279) = 558.

Time = 2.63 (sec) , antiderivative size = 21750, normalized size of antiderivative = 66.72

$$\int \frac{\csc^2(x)}{a + b \cos(x) + c \cos^2(x)} dx = \text{Too large to display}$$

[In] integrate(csc(x)^2/(a+b\*cos(x)+c\*cos(x)^2),x, algorithm="giac")

[Out] ((2\*a^2\*b^6 - 4\*a\*b^7 + 2\*b^8 - 18\*a^3\*b^4\*c + 34\*a^2\*b^5\*c - 10\*a\*b^6\*c - 6\*b^7\*c + 48\*a^4\*b^2\*c^2 - 80\*a^3\*b^3\*c^2 - 22\*a^2\*b^4\*c^2 + 52\*a\*b^5\*c^2 + 4\*b^6\*c^2 - 32\*a^5\*c^3 + 32\*a^4\*b\*c^3 + 144\*a^3\*b^2\*c^3 - 128\*a^2\*b^3\*c^3 - 38\*a\*b^4\*c^3 + 2\*b^5\*c^3 - 96\*a^4\*c^4 + 64\*a^3\*b\*c^4 + 112\*a^2\*b^2\*c^4 - 16\*a\*b^3\*c^4 - 2\*b^4\*c^4 - 96\*a^3\*c^5 + 32\*a^2\*b\*c^5 + 16\*a\*b^2\*c^5 - 32\*a^2\*c^6 + 3\*sqrt(a^2 - a\*b + b\*c - c^2 - sqrt(b^2 - 4\*a\*c))\*(a - b + c))\*sqrt(b^2 - 4\*a\*c)\*a^2\*b^4 - 2\*(b^2 - 4\*a\*c)\*a^2\*b^4 - 2\*sqrt(a^2 - a\*b + b\*c - c^2 - sqrt(b^2 - 4\*a\*c))\*(a - b + c))\*sqrt(b^2 - 4\*a\*c)\*a\*b^5 + 4\*(b^2 - 4\*a\*c)\*a\*b^5 - 5\*sqrt(a^2 - a\*b + b\*c - c^2 - sqrt(b^2 - 4\*a\*c))\*(a - b + c))\*sqrt(b^2 - 4\*a\*c)\*b^6 - 2\*(b^2 - 4\*a\*c)\*b^6 - 15\*sqrt(a^2 - a\*b + b\*c - c^2 - sqrt(b^2 - 4\*a\*c))\*(a - b + c))\*sqrt(b^2 - 4\*a\*c)\*a^3\*b^2\*c + 10\*(b^2 - 4\*a\*c)\*a^3\*b^2\*c + 7\*sqrt(a^2 - a\*b + b\*c - c^2 - sqrt(b^2 - 4\*a\*c))\*(a - b + c))\*sqrt(b^2 - 4\*a\*c)\*a^2\*b^3\*c - 18\*(b^2 - 4\*a\*c)\*a^2\*b^3\*c + 41\*sqrt(a^2 - a\*b + b\*c - c^2 - sqrt(b^2 - 4\*a\*c))\*(a - b + c))\*sqrt(b^2 - 4\*a\*c)\*a\*b^4\*c + 2\*(b^2 - 4\*a\*c)\*a\*b^4\*c + 11\*sqrt(a^2 - a\*b + b\*c - c^2 - sqrt(b^2 - 4\*a\*c))\*(a - b + c))\*sqrt(b^2 - 4\*a\*c)\*b^5\*c + 6\*(b^2 - 4\*a\*c)\*b^5\*c + 12\*sqrt(a^2 - a\*b + b\*c - c^2 - sqrt(b^2 - 4\*a\*c))\*(a - b + c))\*sqrt(b^2 - 4\*a\*c)\*a^4\*c^2 - 8\*(b^2 - 4\*a\*c)\*a^4\*c^2 + 4\*sqrt(a^2 - a\*b + b\*c - c^2 - sqrt(b^2 - 4\*a\*c))\*(a - b + c))\*sqrt(b^2 - 4\*a\*c)\*a^3\*b\*c^2 + 8\*(b^2 - 4\*a\*c)\*a^3\*b\*c^2 - 101\*sqrt(a^2 - a\*b + b\*c - c^2 - sqrt(b^2 - 4\*a\*c))\*(a - b + c))\*sqrt(b^2 - 4\*a\*c)\*a^2\*b^2\*c^2 + 30\*(b^2 - 4\*a\*c)\*a^2\*b^2\*c^2 - 62\*sqrt(a^2 - a\*b + b\*c - c^2 - sqrt(b^2 - 4\*a\*c))\*(a - b + c))\*sqrt(b^2 - 4\*a\*c)\*a\*b^3\*c^2 - 28\*(b^2 - 4\*a\*c)\*a\*b^3\*c^2 - 6\*sqrt(a^2 - a\*b + b\*c - c^2 - sqrt(b^2 - 4\*a\*c))\*(a - b + c))\*sqrt(b^2 - 4\*a\*c)\*b^4\*c^2 - 4\*(b^2 - 4\*a\*c)\*b^4\*c^2 + 68\*sqrt(a^2 - a\*b + b\*c - c^2 - sqrt(b^2 - 4\*a\*c))\*(a - b + c))\*sqrt(b^2 - 4\*a\*c)\*a^3\*c^3 - 24\*(b^2 - 4\*a\*c)\*a^3\*c^3 + 72\*sqrt(a^2 - a\*b + b\*c - c^2 - sqrt(b^2 - 4\*a\*c))\*(a - b + c))\*sqrt(b^2 - 4\*a\*c)\*a^2\*b\*c^3 + 16\*(b^2 - 4\*a\*c)\*a^2\*b\*c^3 + 15\*sqrt(a^2 - a\*b + b\*c - c^2 - sqrt(b^2 - 4\*a\*c))\*(a - b + c))\*sqrt

$$\begin{aligned}
& t(b^2 - 4ac)ab^2c^3 + 22(b^2 - 4ac)ab^2c^3 - \sqrt{a^2 - ab + bc} \\
& c - c^2 - \sqrt{b^2 - 4ac}(a - b + c)\sqrt{b^2 - 4ac}b^3c^3 - 2(b^2 - 4ac)b^3c^3 + 36\sqrt{a^2 - ab + bc} \\
& - c^2 - \sqrt{b^2 - 4ac}(a - b + c)\sqrt{b^2 - 4ac}a^2c^4 - 24(b^2 - 4ac)a^2c^4 + 4\sqrt{a^2 - ab + bc} \\
& - c^2 - \sqrt{b^2 - 4ac}(a - b + c)\sqrt{b^2 - 4ac}ab^3c^4 + 8(b^2 - 4ac)ab^3c^4 + 5\sqrt{a^2 - ab + bc} \\
& - c^2 - \sqrt{b^2 - 4ac}(a - b + c)\sqrt{b^2 - 4ac}b^2c^4 + 2(b^2 - 4ac)b^2c^4 - 20\sqrt{a^2 - ab + bc} \\
& - c^2 - \sqrt{b^2 - 4ac}(a - b + c)\sqrt{b^2 - 4ac}a^3c^5 - 8(b^2 - 4ac)a^3c^5)(a^2 - b^2 + 2ac + c^2)^2 \text{abs}(-a + b - c) \\
& + (4a^4b^6 - 8a^3b^7 + 8a^2b^8 - 4b^9 - 36a^5b^4c + 76a^4b^5c + 8a^3b^6c - 96a^2b^7c + 44ab^8c + 4b^9c + 96a^6b^2c^2 - 224a^5b^3c^2 - 84a^4b^4c^2 + 432a^3b^5c^2 - 160a^2b^6c^2 - 72ab^7c^2 + 12b^8c^2 - 64a^7c^3 + 192a^6b^2c^3 + 288a^5b^3c^3 - 896a^4b^3c^3 + 152a^3b^4c^3 + 456a^2b^5c^3 - 104ab^6c^3 - 16b^7c^3 - 320a^6c^4 + 768a^5b^2c^4 + 320a^4b^3c^4 - 1216a^3b^3c^4 + 216a^2b^4c^4 + 176ab^5c^4 - 4b^6c^4 - 640a^5c^5 + 1152a^4b^2c^5 + 192a^3b^2c^5 - 640a^2b^3c^5 + 12ab^4c^5 + 12b^5c^5 - 640a^4c^6 + 768a^3b^2c^6 + 96a^2b^2c^6 - 96ab^3c^6 - 4b^4c^6 - 320a^3c^7 + 192a^2b^2c^7 + 32ab^2c^7 - 64a^2c^8 - 3\sqrt{a^2 - ab + bc} \\
& - c^2 - \sqrt{b^2 - 4ac}(a - b + c))a^5b^4 + 5\sqrt{a^2 - ab + bc} \\
& - c^2 - \sqrt{b^2 - 4ac}(a - b + c))a^4b^5 + 6\sqrt{a^2 - ab + bc} \\
& - c^2 - \sqrt{b^2 - 4ac}(a - b + c))a^3b^6 - 10\sqrt{a^2 - ab + bc} \\
& - c^2 - \sqrt{b^2 - 4ac}(a - b + c))a^2b^7 - 3\sqrt{a^2 - ab + bc} \\
& - c^2 - \sqrt{b^2 - 4ac}(a - b + c))ab^8 + 5\sqrt{a^2 - ab + bc} \\
& - c^2 - \sqrt{b^2 - 4ac}(a - b + c))b^9 + 15\sqrt{a^2 - ab + bc} \\
& - c^2 - \sqrt{b^2 - 4ac}(a - b + c))a^6b^2c - 28\sqrt{a^2 - ab + bc} \\
& - c^2 - \sqrt{b^2 - 4ac}(a - b + c))a^5b^3c - 48\sqrt{a^2 - ab + bc} \\
& - c^2 - \sqrt{b^2 - 4ac}(a - b + c))a^4b^4c + 76\sqrt{a^2 - ab + bc} \\
& - c^2 - \sqrt{b^2 - 4ac}(a - b + c))a^3b^5c + 39\sqrt{a^2 - ab + bc} \\
& - c^2 - \sqrt{b^2 - 4ac}(a - b + c))a^2b^6c - 48\sqrt{a^2 - ab + bc} \\
& - c^2 - \sqrt{b^2 - 4ac}(a - b + c))ab^7c - 6\sqrt{a^2 - ab + bc} \\
& - c^2 - \sqrt{b^2 - 4ac}(a - b + c))b^8c - 12\sqrt{a^2 - ab + bc} \\
& - c^2 - \sqrt{b^2 - 4ac}(a - b + c))a^7c^2 + 32\sqrt{a^2 - ab + bc} \\
& - c^2 - \sqrt{b^2 - 4ac}(a - b + c))a^6b^2c^2 + 122\sqrt{a^2 - ab + bc} \\
& - c^2 - \sqrt{b^2 - 4ac}(a - b + c))a^5b^2c^2 - 192\sqrt{a^2 - ab + bc} \\
& - c^2 - \sqrt{b^2 - 4ac}(a - b + c))a^4b^3c^2 - 174\sqrt{a^2 - ab + bc} \\
& - c^2 - \sqrt{b^2 - 4ac}(a - b + c))a^3b^4c^2 + 190\sqrt{a^2 - ab + bc} \\
& - c^2 - \sqrt{b^2 - 4ac}(a - b + c))a^2b^5c^2 + 52\sqrt{a^2 - ab + bc} \\
& - c^2 - \sqrt{b^2 - 4ac}(a - b + c))ab^6c^2 - 10\sqrt{a^2 - ab + bc} \\
& - c^2 - \sqrt{b^2 - 4ac}(a - b + c))b^7c^2 - 104\sqrt{a^2 - ab + bc} \\
& - c^2 - \sqrt{b^2 - 4ac}(a - b + c))a^6c^3 + 192\sqrt{a^2 - ab + bc} \\
& - c^2 - \sqrt{b^2 - 4ac}(a - b + c))a^5b^2c^3 + 333\sqrt{a^2 - ab + bc} \\
& - c^2 - \sqrt{b^2 - 4ac}(a - b + c))a^4b^2c^3 - 392\sqrt{a^2 - ab + bc} \\
& - c^2 - \sqrt{b^2 - 4ac}(a - b + c))a^3b^3c^3 - 196\sqrt{a^2 - ab + bc} \\
& - c^2 - \sqrt{b^2 - 4ac}(a - b + c))a^2b^4c^3 + 76\sqrt{a^2 - ab + bc} \\
& - c^2 - \sqrt{b^2 - 4ac}
\end{aligned}$$

$$\begin{aligned}
& )*(a - b + c))*a*b^5*c^3 + 23*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}} \\
& )*(a - b + c))*b^6*c^3 - 276*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}} \\
& *(a - b + c))*a^5*c^4 + 320*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}* \\
& (a - b + c))*a^4*b*c^4 + 412*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}} \\
& *(a - b + c))*a^3*b^2*c^4 - 176*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a \\
& *c}}*(a - b + c))*a^2*b^3*c^4 - 143*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4 \\
& *a*c}}*(a - b + c))*a*b^4*c^4 - 11*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4 \\
& *a*c}}*(a - b + c))*b^5*c^4 - 304*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4 \\
& *a*c}}*(a - b + c))*a^4*c^5 + 128*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4* \\
& a*c}}*(a - b + c))*a^3*b*c^5 + 233*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4 \\
& *a*c}}*(a - b + c))*a^2*b^2*c^5 + 68*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4 \\
& *a*c}}*(a - b + c))*a*b^3*c^5 - 12*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4 \\
& *a*c}}*(a - b + c))*b^4*c^5 - 116*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4 \\
& *a*c}}*(a - b + c))*a^3*c^6 - 96*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4* \\
& a*c}}*(a - b + c))*a^2*b*c^6 + 42*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4* \\
& a*c}}*(a - b + c))*a*b^2*c^6 + 16*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4* \\
& a*c}}*(a - b + c))*b^3*c^6 + 24*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a* \\
& c}}*(a - b + c))*a^2*c^7 - 64*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}} \\
& *(a - b + c))*a*b*c^7 - 5*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a \\
& - b + c))*b^2*c^7 + 20*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - \\
& b + c))*a*c^8 - 4*(b^2 - 4*a*c)*a^4*b^4 + 8*(b^2 - 4*a*c)*a^3*b^5 - 8*(b^2 \\
& - 4*a*c)*a*b^7 + 4*(b^2 - 4*a*c)*b^8 + 20*(b^2 - 4*a*c)*a^5*b^2*c - 44*(b^ \\
& 2 - 4*a*c)*a^4*b^3*c - 8*(b^2 - 4*a*c)*a^3*b^4*c + 64*(b^2 - 4*a*c)*a^2*b^5 \\
& *c - 28*(b^2 - 4*a*c)*a*b^6*c - 4*(b^2 - 4*a*c)*b^7*c - 16*(b^2 - 4*a*c)*a^ \\
& 6*c^2 + 48*(b^2 - 4*a*c)*a^5*b*c^2 + 52*(b^2 - 4*a*c)*a^4*b^2*c^2 - 176*(b^ \\
& 2 - 4*a*c)*a^3*b^3*c^2 + 48*(b^2 - 4*a*c)*a^2*b^4*c^2 + 56*(b^2 - 4*a*c)*a* \\
& b^5*c^2 - 12*(b^2 - 4*a*c)*b^6*c^2 - 80*(b^2 - 4*a*c)*a^5*c^3 + 192*(b^2 - \\
& 4*a*c)*a^4*b*c^3 + 40*(b^2 - 4*a*c)*a^3*b^2*c^3 - 232*(b^2 - 4*a*c)*a^2*b^3 \\
& *c^3 + 56*(b^2 - 4*a*c)*a*b^4*c^3 + 16*(b^2 - 4*a*c)*b^5*c^3 - 160*(b^2 - 4 \\
& *a*c)*a^4*c^4 + 288*(b^2 - 4*a*c)*a^3*b*c^4 + 8*(b^2 - 4*a*c)*a^2*b^2*c^4 - \\
& 112*(b^2 - 4*a*c)*a*b^3*c^4 + 4*(b^2 - 4*a*c)*b^4*c^4 - 160*(b^2 - 4*a*c)* \\
& a^3*c^5 + 192*(b^2 - 4*a*c)*a^2*b*c^5 + 4*(b^2 - 4*a*c)*a*b^2*c^5 - 12*(b^2 \\
& - 4*a*c)*b^3*c^5 - 80*(b^2 - 4*a*c)*a^2*c^6 + 48*(b^2 - 4*a*c)*a*b*c^6 + 4 \\
& *(b^2 - 4*a*c)*b^2*c^6 - 16*(b^2 - 4*a*c)*a*c^7)*\text{abs}(-a^2 + b^2 - 2*a*c - c \\
& ^2)*\text{abs}(-a + b - c) - (2*a^7*b^5 - 4*a^6*b^6 - 2*a^5*b^7 + 8*a^4*b^8 - 2*a^ \\
& 3*b^9 - 4*a^2*b^10 + 2*a*b^11 - 14*a^8*b^3*c + 26*a^7*b^4*c + 28*a^6*b^5*c \\
& - 70*a^5*b^6*c + 46*a^3*b^8*c - 12*a^2*b^9*c - 2*a*b^10*c - 2*b^11*c + 24*a \\
& ^9*b*c^2 - 36*a^8*b^2*c^2 - 120*a^7*b^3*c^2 + 190*a^6*b^4*c^2 + 102*a^5*b^5 \\
& *c^2 - 194*a^4*b^6*c^2 - 4*a^3*b^7*c^2 + 18*a^2*b^8*c^2 + 14*a*b^9*c^2 + 6* \\
& b^10*c^2 - 16*a^9*c^3 + 160*a^8*b*c^3 - 128*a^7*b^2*c^3 - 384*a^6*b^3*c^3 + \\
& 338*a^5*b^4*c^3 + 176*a^4*b^5*c^3 - 60*a^3*b^6*c^3 - 32*a^2*b^7*c^3 - 54*a \\
& *b^8*c^3 - 96*a^8*c^4 + 416*a^7*b*c^4 - 112*a^6*b^2*c^4 - 504*a^5*b^3*c^4 + \\
& 70*a^4*b^4*c^4 + 46*a^3*b^5*c^4 + 184*a^2*b^6*c^4 + 22*a*b^7*c^4 - 18*b^8* \\
& c^4 - 224*a^7*c^5 + 480*a^6*b*c^5 + 96*a^5*b^2*c^5 - 76*a^4*b^3*c^5 - 306*a \\
& ^3*b^4*c^5 - 180*a^2*b^5*c^5 + 130*a*b^6*c^5 + 16*b^7*c^5 - 224*a^6*c^6 + 8
\end{aligned}$$

$$\begin{aligned}
& 0a^5b^6c^6 + 200a^4b^2c^6 + 472a^3b^3c^6 - 262a^2b^4c^6 - 150ab^5c^6 + 14b^6c^6 - 416a^4b^2c^7 + 64a^3b^2c^7 + 464a^2b^3c^7 - 58 \\
& *ab^4c^7 - 24b^5c^7 + 224a^4c^8 - 480a^3b^2c^8 - 48a^2b^2c^8 + 15 \\
& 2ab^3c^8 + 2b^4c^8 + 224a^3c^9 - 224a^2b^2c^9 - 32ab^2c^9 + 10b^3c^9 + 96a^2c^{10} - 40ab^2c^{10} - 4b^2c^{10} + 16a^2c^{11} + 3\sqrt{a^2 - \\
& ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c)\sqrt{b^2 - 4ac}a^7b^3 \\
& - 2(b^2 - 4ac)a^7b^3 - 2\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}} \\
& )(a - b + c)\sqrt{b^2 - 4ac}a^6b^4 + 4(b^2 - 4ac)a^6b^4 - 11\sqrt{ \\
& a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c)\sqrt{b^2 - 4ac} \\
& a^5b^5 + 2(b^2 - 4ac)a^5b^5 + 4\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - \\
& 4ac}}(a - b + c)\sqrt{b^2 - 4ac}a^4b^6 - 8(b^2 - 4ac)a^4b^6 \\
& + 13\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c)\sqrt{b^2 - \\
& 4ac}a^3b^7 + 2(b^2 - 4ac)a^3b^7 - 2\sqrt{a^2 - ab + bc - c^2 - \\
& \sqrt{b^2 - 4ac}}(a - b + c)\sqrt{b^2 - 4ac}a^2b^8 + 4(b^2 - 4ac) \\
& a^2b^8 - 5\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c)\sqrt{ \\
& b^2 - 4ac}a^2b^8 - 2(b^2 - 4ac)a^2b^8 - 9\sqrt{a^2 - ab + bc - c^2 \\
& - \sqrt{b^2 - 4ac}}(a - b + c)\sqrt{b^2 - 4ac}a^8b^2c + 6(b^2 - 4ac) \\
& c)a^8b^2c + 3\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c) \\
& \sqrt{b^2 - 4ac}a^7b^2c - 10(b^2 - 4ac)a^7b^2c + 58\sqrt{a^2 - ab \\
& + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c)\sqrt{b^2 - 4ac}a^6b^3c \\
& - 20(b^2 - 4ac)a^6b^3c - \sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}} \\
& c)(a - b + c)\sqrt{b^2 - 4ac}a^5b^4c + 38(b^2 - 4ac)a^5b^4c - \\
& 92\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c)\sqrt{b^2 - 4 \\
& ac}a^4b^5c + 8(b^2 - 4ac)a^4b^5c - 15\sqrt{a^2 - ab + bc - c^2 \\
& - \sqrt{b^2 - 4ac}}(a - b + c)\sqrt{b^2 - 4ac}a^3b^6c - 30(b^2 - 4 \\
& ac)a^3b^6c + 38\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b \\
& + c)\sqrt{b^2 - 4ac}a^2b^7c + 4(b^2 - 4ac)a^2b^7c + 13\sqrt{a^2 \\
& - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c)\sqrt{b^2 - 4ac}ab^8 \\
& c + 2(b^2 - 4ac)ab^8c + 5\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4 \\
& ac}}(a - b + c)\sqrt{b^2 - 4ac}b^9c + 2(b^2 - 4ac)b^9c + 6\sqrt{ \\
& a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c)\sqrt{b^2 - 4ac}a^8 \\
& c^2 - 4(b^2 - 4ac)a^8c^2 - 76\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 \\
& - 4ac}}(a - b + c)\sqrt{b^2 - 4ac}a^7b^2c^2 + 40(b^2 - 4ac)a^7b^2 \\
& c^2 - 43\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c)\sqrt{ \\
& b^2 - 4ac}a^6b^2c^2 - 38(b^2 - 4ac)a^6b^2c^2 + 209\sqrt{a^2 - ab \\
& + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c)\sqrt{b^2 - 4ac}a^5b^3c^2 \\
& - 70(b^2 - 4ac)a^5b^3c^2 + 109\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 \\
& - 4ac}}(a - b + c)\sqrt{b^2 - 4ac}a^4b^4c^2 + 74(b^2 - 4ac)a^4 \\
& b^4c^2 - 94\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c) \\
& \sqrt{b^2 - 4ac}a^3b^5c^2 + 20(b^2 - 4ac)a^3b^5c^2 - 69\sqrt{a^2 - \\
& ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c)\sqrt{b^2 - 4ac}a^2b^6 \\
& c^2 - 10(b^2 - 4ac)a^2b^6c^2 - 47\sqrt{a^2 - ab + bc - c^2 - \sqrt{ \\
& b^2 - 4ac}}(a - b + c)\sqrt{b^2 - 4ac}ab^7c^2 - 6(b^2 - 4ac)ab^7 \\
& c^2 - 11\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c) \\
& \sqrt{b^2 - 4ac}b^8c^2 - 6(b^2 - 4ac)b^8c^2 + 52\sqrt{a^2 - ab + bc
\end{aligned}$$



$$\begin{aligned}
 & - c^2 - \sqrt{b^2 - 4ac}(a - b + c))\sqrt{b^2 - 4ac}a^7c^3 - 24(b^2 - 4ac)a^7c^3 - 156\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}(a - b + c)}\sqrt{b^2 - 4ac}a^6bc^3 + 104(b^2 - 4ac)a^6bc^3 - 205\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}(a - b + c)}\sqrt{b^2 - 4ac}a^5b^2c^3 - 42(b^2 - 4ac)a^5b^2c^3 + 100\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}(a - b + c)}\sqrt{b^2 - 4ac}a^4b^3c^3 - 96(b^2 - 4ac)a^4b^3c^3 + 162\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}(a - b + c)}\sqrt{b^2 - 4ac}a^3b^4c^3 + 20(b^2 - 4ac)a^3b^4c^3 + 148\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}(a - b + c)}\sqrt{b^2 - 4ac}a^2b^5c^3 + 8(b^2 - 4ac)a^2b^5c^3 + 47\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}(a - b + c)}\sqrt{b^2 - 4ac}ab^6c^3 + 30(b^2 - 4ac)ab^6c^3 - 4\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}(a - b + c)}\sqrt{b^2 - 4ac}b^7c^3 + 132\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}(a - b + c)}\sqrt{b^2 - 4ac}a^6c^4 - 56(b^2 - 4ac)a^6c^4 - 36\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}(a - b + c)}\sqrt{b^2 - 4ac}a^5bc^4 + 120(b^2 - 4ac)a^5bc^4 - 211\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}(a - b + c)}\sqrt{b^2 - 4ac}a^4b^2c^4 + 10(b^2 - 4ac)a^4b^2c^4 - 251\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}(a - b + c)}\sqrt{b^2 - 4ac}a^3b^3c^4 - 14(b^2 - 4ac)a^3b^3c^4 - 84\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}(a - b + c)}\sqrt{b^2 - 4ac}a^2b^4c^4 - 64(b^2 - 4ac)a^2b^4c^4 + 73\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}(a - b + c)}\sqrt{b^2 - 4ac}ab^5c^4 - 22(b^2 - 4ac)ab^5c^4 + 33\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}(a - b + c)}\sqrt{b^2 - 4ac}b^6c^4 + 18(b^2 - 4ac)b^6c^4 + 100\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}(a - b + c)}\sqrt{b^2 - 4ac}a^5c^5 - 56(b^2 - 4ac)a^5c^5 + 194\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}(a - b + c)}\sqrt{b^2 - 4ac}a^4bc^5 + 20(b^2 - 4ac)a^4bc^5 + 113\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}(a - b + c)}\sqrt{b^2 - 4ac}a^3b^2c^5 + 50(b^2 - 4ac)a^3b^2c^5 - 198\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}(a - b + c)}\sqrt{b^2 - 4ac}a^2b^3c^5 + 92(b^2 - 4ac)a^2b^3c^5 - 161\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}(a - b + c)}\sqrt{b^2 - 4ac}ab^4c^5 - 58(b^2 - 4ac)ab^4c^5 - 24\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}(a - b + c)}\sqrt{b^2 - 4ac}b^5c^5 - 16(b^2 - 4ac)b^5c^5 - 80\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}(a - b + c)}\sqrt{b^2 - 4ac}a^4c^6 + 172\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}(a - b + c)}\sqrt{b^2 - 4ac}a^3bc^6 - 104(b^2 - 4ac)a^3bc^6 + 263\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}(a - b + c)}\sqrt{b^2 - 4ac}a^2b^2c^6 + 30(b^2 - 4ac)a^2b^2c^6 + 39\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}(a - b + c)}\sqrt{b^2 - 4ac}ab^3c^6 + 86(b^2 - 4ac)ab^3c^6 - 23\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}(a - b + c)}\sqrt{b^2 - 4ac}b^4c^6 - 14(b^2 - 4ac)b^4c^6 - 164\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}(a - b + c)}\sqrt{b^2 - 4ac}a^3c^7 + 56(b^2 - 4ac)a^3c^7 - 12\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}(a - b + c)}\sqrt{b^2 - 4ac}a^2bc^7 - 120(b^2 - 4ac)a^2bc^7 + 89\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}(a - b + c)}\sqrt{b^2 - 4ac}abc^7 + 89\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}(a - b + c)}\sqrt{b^2 - 4ac}abc^7 + 89\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}(a - b + c)}\sqrt{b^2 - 4ac}abc^7
 \end{aligned}$$

$$\begin{aligned}
& *b + b*c - c^2 - \sqrt{b^2 - 4*a*c}*(a - b + c))*\sqrt{b^2 - 4*a*c}*a*b^2*c^7 \\
& + 2*(b^2 - 4*a*c)*a*b^2*c^7 + 40*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}} \\
& *(a - b + c))*\sqrt{b^2 - 4*a*c}*b^3*c^7 + 24*(b^2 - 4*a*c)*b^3*c^7 - 6 \\
& 8*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c))*\sqrt{b^2 - 4*a*c} \\
& *a^2*c^8 + 56*(b^2 - 4*a*c)*a^2*c^8 - 60*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}} \\
& *(a - b + c))*\sqrt{b^2 - 4*a*c}*a*b*c^8 - 56*(b^2 - 4*a*c)*a*b*c^8 - 9*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}} \\
& *(a - b + c))*\sqrt{b^2 - 4*a*c}*b^2*c^8 - 2*(b^2 - 4*a*c)*b^2*c^8 + 12*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}} \\
& *(a - b + c))*\sqrt{b^2 - 4*a*c}*a*c^9 + 24*(b^2 - 4*a*c)*a*c^9 - 17*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}} \\
& *(a - b + c))*\sqrt{b^2 - 4*a*c}*b*c^9 - 10*(b^2 - 4*a*c)*b*c^9 + 10*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}} \\
& *(a - b + c))*\sqrt{b^2 - 4*a*c}*c^{10} + 4*(b^2 - 4*a*c)*c^{10})*\text{abs}(-a + b - c))*(\text{pi}*\text{floor}(1/2*x/\text{pi} + 1/2) + \text{arctan}(2*\sqrt{1/2} \\
& *\text{tan}(1/2*x)/\sqrt{(2*a^3 - 2*a*b^2 + 2*a^2*c + 2*b^2*c - 2*a*c^2 - 2*c^3 + \sqrt{-4*(a^3 + a^2*b - a*b^2 - b^3 + 3*a^2*c + 2*a*b*c - b^2*c + 3*a*c^2 + b*c^2 + c^3)} \\
& *(a^3 - a^2*b - a*b^2 + b^3 + 3*a^2*c - 2*a*b*c - b^2*c + 3*a*c^2 - b*c^2 + c^3) + 4*(a^3 - a*b^2 + a^2*c + b^2*c - a*c^2 - c^3)^2}))/((a^3 - a^2*b - a*b^2 + b^3 + 3*a^2*c - 2*a*b*c - b^2*c + 3*a*c^2 - b*c^2 + c^3) \\
& )))/((3*a^{10}*b^2 - 8*a^9*b^3 - 7*a^8*b^4 + 32*a^7*b^5 - 2*a^6*b^6 - 48*a^5*b^7 + 18*a^4*b^8 + 32*a^3*b^9 - 17*a^2*b^{10} - 8*a*b^{11} + 5*b^{12} - 12*a^{11}*c \\
& + 32*a^{10}*b*c + 66*a^9*b^2*c - 208*a^8*b^3*c - 80*a^7*b^4*c + 448*a^6*b^5*c - 36*a^5*b^6*c - 416*a^4*b^7*c + 108*a^3*b^8*c + 160*a^2*b^9*c - 46*a*b^{10}*c - 16*b^{11}*c - 152*a^{10}*c^2 + 320*a^9*b*c^2 + 543*a^8*b^2*c^2 - 1344*a^7*b^3*c^2 - 532*a^6*b^4*c^2 + 1920*a^5*b^5*c^2 + 50*a^4*b^6*c^2 - 1088*a^3*b^7*c^2 + 84*a^2*b^8*c^2 + 192*a*b^9*c^2 + 7*b^{10}*c^2 - 764*a^9*c^3 + 1280*a^8*b*c^3 + 2072*a^7*b^2*c^3 - 3744*a^6*b^3*c^3 - 1712*a^5*b^4*c^3 + 3424*a^4*b^5*c^3 + 520*a^3*b^6*c^3 - 992*a^2*b^7*c^3 - 116*a*b^8*c^3 + 32*b^9*c^3 - 2080*a^8*c^4 + 2688*a^7*b*c^4 + 4342*a^6*b^2*c^4 - 5264*a^5*b^3*c^4 - 2890*a^4*b^4*c^4 + 2720*a^3*b^5*c^4 + 802*a^2*b^6*c^4 - 272*a*b^7*c^4 - 46*b^8*c^4 - 3416*a^7*c^5 + 3136*a^6*b*c^5 + 5388*a^5*b^2*c^5 - 3648*a^4*b^3*c^5 - 2672*a^3*b^4*c^5 + 768*a^2*b^5*c^5 + 412*a*b^6*c^5 - 3472*a^6*c^6 + 1792*a^5*b*c^6 + 4006*a^4*b^2*c^6 - 768*a^3*b^3*c^6 - 1300*a^2*b^4*c^6 - 64*a*b^5*c^6 + 46*b^6*c^6 - 2072*a^5*c^7 + 1688*a^3*b^2*c^7 + 416*a^2*b^3*c^7 - 272*a*b^4*c^7 - 32*b^5*c^7 - 544*a^4*c^8 - 640*a^3*b*c^8 + 327*a^2*b^2*c^8 + 216*a*b^3*c^8 - 7*b^4*c^8 + 100*a^3*c^9 - 352*a^2*b*c^9 + 2*a*b^2*c^9 + 16*b^3*c^9 + 104*a^2*c^{10} - 64*a*b*c^{10} - 5*b^2*c^{10} + 20*a*c^{11}))*\text{abs}(-a^2 + b^2 - 2*a*c - c^2)) - ((2*a^2*b^6 - 4*a*b^7 + 2*b^8 - 18*a^3*b^4*c + 34*a^2*b^5*c - 10*a*b^6*c - 6*b^7*c + 48*a^4*b^2*c^2 - 80*a^3*b^3*c^2 - 22*a^2*b^4*c^2 + 52*a*b^5*c^2 + 4*b^6*c^2 - 32*a^5*c^3 + 32*a^4*b*c^3 + 144*a^3*b^2*c^3 - 128*a^2*b^3*c^3 - 38*a*b^4*c^3 + 2*b^5*c^3 - 96*a^4*c^4 + 64*a^3*b*c^4 + 112*a^2*b^2*c^4 - 16*a*b^3*c^4 - 2*b^4*c^4 - 96*a^3*c^5 + 32*a^2*b*c^5 + 16*a*b^2*c^5 - 32*a^2*c^6 + 3*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}}*(a - b + c))*\sqrt{b^2 - 4*a*c}*a^2*b^4 - 2*(b^2 - 4*a*c)*a^2*b^4 - 2*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}}*(a - b + c))*\sqrt{b^2 - 4*a*c}*a*b^5 + 4*(b^2 - 4*a*c)*a*b^5 - 5*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4
\end{aligned}$$

$$\begin{aligned}
& *a*c)*(a - b + c))*\text{sqrt}(b^2 - 4*a*c)*b^6 - 2*(b^2 - 4*a*c)*b^6 - 15*\text{sqrt}(a^2 - a*b + b*c - c^2 + \text{sqrt}(b^2 - 4*a*c))*(a - b + c))*\text{sqrt}(b^2 - 4*a*c)*a^3* \\
& b^2*c + 10*(b^2 - 4*a*c)*a^3*b^2*c + 7*\text{sqrt}(a^2 - a*b + b*c - c^2 + \text{sqrt}(b^2 - 4*a*c))*(a - b + c))*\text{sqrt}(b^2 - 4*a*c)*a^2*b^3*c - 18*(b^2 - 4*a*c)*a^2* \\
& b^3*c + 41*\text{sqrt}(a^2 - a*b + b*c - c^2 + \text{sqrt}(b^2 - 4*a*c))*(a - b + c))*\text{sqrt}(b^2 - 4*a*c)*a*b^4*c + 2*(b^2 - 4*a*c)*a*b^4*c + 11*\text{sqrt}(a^2 - a*b + b*c - \\
& c^2 + \text{sqrt}(b^2 - 4*a*c))*(a - b + c))*\text{sqrt}(b^2 - 4*a*c)*b^5*c + 6*(b^2 - 4*a*c)*b^5*c + 12*\text{sqrt}(a^2 - a*b + b*c - c^2 + \text{sqrt}(b^2 - 4*a*c))*(a - b + c)) \\
& *\text{sqrt}(b^2 - 4*a*c)*a^4*c^2 - 8*(b^2 - 4*a*c)*a^4*c^2 + 4*\text{sqrt}(a^2 - a*b + b*c - c^2 + \text{sqrt}(b^2 - 4*a*c))*(a - b + c))*\text{sqrt}(b^2 - 4*a*c)*a^3*b*c^2 + 8*( \\
& b^2 - 4*a*c)*a^3*b*c^2 - 101*\text{sqrt}(a^2 - a*b + b*c - c^2 + \text{sqrt}(b^2 - 4*a*c))*(a - b + c))*\text{sqrt}(b^2 - 4*a*c)*a^2*b^2*c^2 + 30*(b^2 - 4*a*c)*a^2*b^2*c^2 \\
& - 62*\text{sqrt}(a^2 - a*b + b*c - c^2 + \text{sqrt}(b^2 - 4*a*c))*(a - b + c))*\text{sqrt}(b^2 - 4*a*c)*a*b^3*c^2 - 28*(b^2 - 4*a*c)*a*b^3*c^2 - 6*\text{sqrt}(a^2 - a*b + b*c - c \\
& ^2 + \text{sqrt}(b^2 - 4*a*c))*(a - b + c))*\text{sqrt}(b^2 - 4*a*c)*b^4*c^2 - 4*(b^2 - 4*a*c)*b^4*c^2 + 68*\text{sqrt}(a^2 - a*b + b*c - c^2 + \text{sqrt}(b^2 - 4*a*c))*(a - b + c) \\
& )*\text{sqrt}(b^2 - 4*a*c)*a^3*c^3 - 24*(b^2 - 4*a*c)*a^3*c^3 + 72*\text{sqrt}(a^2 - a*b + b*c - c^2 + \text{sqrt}(b^2 - 4*a*c))*(a - b + c))*\text{sqrt}(b^2 - 4*a*c)*a^2*b*c^3 + \\
& 16*(b^2 - 4*a*c)*a^2*b*c^3 + 15*\text{sqrt}(a^2 - a*b + b*c - c^2 + \text{sqrt}(b^2 - 4*a*c))*(a - b + c))*\text{sqrt}(b^2 - 4*a*c)*a*b^2*c^3 + 22*(b^2 - 4*a*c)*a*b^2*c^3 \\
& - \text{sqrt}(a^2 - a*b + b*c - c^2 + \text{sqrt}(b^2 - 4*a*c))*(a - b + c))*\text{sqrt}(b^2 - 4*a*c)*b^3*c^3 - 2*(b^2 - 4*a*c)*b^3*c^3 + 36*\text{sqrt}(a^2 - a*b + b*c - c^2 + \text{sq} \\
& \text{rt}(b^2 - 4*a*c))*(a - b + c))*\text{sqrt}(b^2 - 4*a*c)*a^2*c^4 - 24*(b^2 - 4*a*c)*a^2*c^4 + 4*\text{sqrt}(a^2 - a*b + b*c - c^2 + \text{sqrt}(b^2 - 4*a*c))*(a - b + c))*\text{sqrt} \\
& (b^2 - 4*a*c)*a*b*c^4 + 8*(b^2 - 4*a*c)*a*b*c^4 + 5*\text{sqrt}(a^2 - a*b + b*c - c^2 + \text{sqrt}(b^2 - 4*a*c))*(a - b + c))*\text{sqrt}(b^2 - 4*a*c)*b^2*c^4 + 2*(b^2 - 4 \\
& *a*c)*b^2*c^4 - 20*\text{sqrt}(a^2 - a*b + b*c - c^2 + \text{sqrt}(b^2 - 4*a*c))*(a - b + c))*\text{sqrt}(b^2 - 4*a*c)*a*c^5 - 8*(b^2 - 4*a*c)*a*c^5)*(a^2 - b^2 + 2*a*c + c \\
& ^2)^2*\text{abs}(-a + b - c) + (4*a^4*b^6 - 8*a^3*b^7 + 8*a*b^9 - 4*b^10 - 36*a^5*b^4*c + 76*a^4*b^5*c + 8*a^3*b^6*c - 96*a^2*b^7*c + 44*a*b^8*c + 4*b^9*c + \\
& 96*a^6*b^2*c^2 - 224*a^5*b^3*c^2 - 84*a^4*b^4*c^2 + 432*a^3*b^5*c^2 - 160*a^2*b^6*c^2 - 72*a*b^7*c^2 + 12*b^8*c^2 - 64*a^7*c^3 + 192*a^6*b*c^3 + 288*a^5*b^2*c^3 - \\
& 896*a^4*b^3*c^3 + 152*a^3*b^4*c^3 + 456*a^2*b^5*c^3 - 104*a*b^6*c^3 - 16*b^7*c^3 - 320*a^6*c^4 + 768*a^5*b*c^4 + 320*a^4*b^2*c^4 - 1216*a^3*b^3*c^4 + 216*a^2*b^4*c^4 + \\
& 176*a*b^5*c^4 - 4*b^6*c^4 - 640*a^5*c^5 + 1152*a^4*b*c^5 + 192*a^3*b^2*c^5 - 640*a^2*b^3*c^5 + 12*a*b^4*c^5 + 12*b^5*c^5 - 640*a^4*c^6 + 768*a^3*b*c^6 + 96*a^2*b^2*c^6 - \\
& 96*a*b^3*c^6 - 4*b^4*c^6 - 320*a^3*c^7 + 192*a^2*b*c^7 + 32*a*b^2*c^7 - 64*a^2*c^8 + 3*\text{sqrt}(a^2 - a*b + b*c - c^2 + \text{sqrt}(b^2 - 4*a*c))*(a - b + c))*a^5*b^4 - 5*\text{sqrt}(a^2 - a*b \\
& + b*c - c^2 + \text{sqrt}(b^2 - 4*a*c))*(a - b + c))*a^4*b^5 - 6*\text{sqrt}(a^2 - a*b + b*c - c^2 + \text{sqrt}(b^2 - 4*a*c))*(a - b + c))*a^3*b^6 + 10*\text{sqrt}(a^2 - a*b + b*c \\
& - c^2 + \text{sqrt}(b^2 - 4*a*c))*(a - b + c))*a^2*b^7 + 3*\text{sqrt}(a^2 - a*b + b*c - c^2 + \text{sqrt}(b^2 - 4*a*c))*(a - b + c))*a*b^8 - 5*\text{sqrt}(a^2 - a*b + b*c - c^2 + \\
& \text{sqrt}(b^2 - 4*a*c))*(a - b + c))*b^9 - 15*\text{sqrt}(a^2 - a*b + b*c - c^2 + \text{sqrt}(b^2 - 4*a*c))*(a - b + c))*a^6*b^2*c + 28*\text{sqrt}(a^2 - a*b + b*c - c^2 + \text{sqrt}(
\end{aligned}$$

$$\begin{aligned}
& b^2 - 4ac)(a - b + c))a^5b^3c + 48\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}} \\
& (a - b + c))a^4b^4c - 76\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}} \\
& (a - b + c))a^3b^5c - 39\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}} \\
& (a - b + c))a^2b^6c + 48\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}} \\
& (a - b + c))ab^7c + 6\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}} \\
& (a - b + c))b^8c + 12\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}} \\
& (a - b + c))a^7c^2 - 32\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}} \\
& (a - b + c))a^6b^2c^2 - 122\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}} \\
& (a - b + c))a^5b^2c^2 + 192\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}} \\
& (a - b + c))a^4b^3c^2 + 174\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}} \\
& (a - b + c))a^3b^4c^2 - 190\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}} \\
& (a - b + c))a^2b^5c^2 - 52\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}} \\
& (a - b + c))ab^6c^2 + 10\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}} \\
& (a - b + c))b^7c^2 + 104\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}} \\
& (a - b + c))a^6c^3 - 192\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}} \\
& (a - b + c))a^5b^2c^3 - 333\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}} \\
& (a - b + c))a^4b^2c^3 + 392\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}} \\
& (a - b + c))a^3b^3c^3 + 196\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}} \\
& (a - b + c))a^2b^4c^3 - 76\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}} \\
& (a - b + c))ab^5c^3 - 23\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}} \\
& (a - b + c))b^6c^3 + 276\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}} \\
& (a - b + c))a^5c^4 - 320\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}} \\
& (a - b + c))a^4b^2c^4 - 412\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}} \\
& (a - b + c))a^3b^2c^4 + 176\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}} \\
& (a - b + c))a^2b^3c^4 + 143\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}} \\
& (a - b + c))ab^4c^4 + 11\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}} \\
& (a - b + c))b^5c^4 + 304\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}} \\
& (a - b + c))a^4c^5 - 128\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}} \\
& (a - b + c))a^3b^2c^5 - 233\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}} \\
& (a - b + c))a^2b^2c^5 - 68\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}} \\
& (a - b + c))ab^3c^5 + 12\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}} \\
& (a - b + c))b^4c^5 + 116\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}} \\
& (a - b + c))a^3c^6 + 96\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}} \\
& (a - b + c))a^2b^2c^6 - 42\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}} \\
& (a - b + c))ab^2c^6 - 16\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}} \\
& (a - b + c))b^3c^6 - 24\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}} \\
& (a - b + c))a^2c^7 + 64\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}} \\
& (a - b + c))ab^2c^7 + 5\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}} \\
& (a - b + c))b^2c^7 - 20\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}} \\
& (a - b + c))a^2c^8 - 4(b^2 - 4ac)a^4b^4 + 8(b^2 - 4ac)a^3b^5 \\
& - 8(b^2 - 4ac)ab^7 + 4(b^2 - 4ac)b^8 + 20(b^2 - 4ac)a^5b^2c \\
& - 44(b^2 - 4ac)a^4b^3c - 8(b^2 - 4ac)a^3b^4c + 64(b^2 - 4ac)a^2b^5c \\
& - 28(b^2 - 4ac)ab^6c - 4(b^2 - 4ac)b^7c - 16(b^2 - 4ac)a^6c^2 \\
& + 48(b^2 - 4ac)a^5b^2c^2 + 52(b^2 - 4ac)a^4b^2c^2 - 176(b^2 - 4ac)a^3b^3c^2 \\
& + 48(b^2 - 4ac)a^2b^4c^2
\end{aligned}$$

$$\begin{aligned}
& + 56*(b^2 - 4*a*c)*a*b^5*c^2 - 12*(b^2 - 4*a*c)*b^6*c^2 - 80*(b^2 - 4*a*c)* \\
& a^5*c^3 + 192*(b^2 - 4*a*c)*a^4*b*c^3 + 40*(b^2 - 4*a*c)*a^3*b^2*c^3 - 232* \\
& (b^2 - 4*a*c)*a^2*b^3*c^3 + 56*(b^2 - 4*a*c)*a*b^4*c^3 + 16*(b^2 - 4*a*c)*b \\
& ^5*c^3 - 160*(b^2 - 4*a*c)*a^4*c^4 + 288*(b^2 - 4*a*c)*a^3*b*c^4 + 8*(b^2 - \\
& 4*a*c)*a^2*b^2*c^4 - 112*(b^2 - 4*a*c)*a*b^3*c^4 + 4*(b^2 - 4*a*c)*b^4*c^4 \\
& - 160*(b^2 - 4*a*c)*a^3*c^5 + 192*(b^2 - 4*a*c)*a^2*b*c^5 + 4*(b^2 - 4*a*c) \\
& )*a*b^2*c^5 - 12*(b^2 - 4*a*c)*b^3*c^5 - 80*(b^2 - 4*a*c)*a^2*c^6 + 48*(b^2 \\
& - 4*a*c)*a*b*c^6 + 4*(b^2 - 4*a*c)*b^2*c^6 - 16*(b^2 - 4*a*c)*a*c^7)*abs(- \\
& a^2 + b^2 - 2*a*c - c^2)*abs(-a + b - c) - (2*a^7*b^5 - 4*a^6*b^6 - 2*a^5*b \\
& ^7 + 8*a^4*b^8 - 2*a^3*b^9 - 4*a^2*b^10 + 2*a*b^11 - 14*a^8*b^3*c + 26*a^7* \\
& b^4*c + 28*a^6*b^5*c - 70*a^5*b^6*c + 46*a^3*b^8*c - 12*a^2*b^9*c - 2*a*b^1 \\
& 0*c - 2*b^11*c + 24*a^9*b*c^2 - 36*a^8*b^2*c^2 - 120*a^7*b^3*c^2 + 190*a^6* \\
& b^4*c^2 + 102*a^5*b^5*c^2 - 194*a^4*b^6*c^2 - 4*a^3*b^7*c^2 + 18*a^2*b^8*c^ \\
& 2 + 14*a*b^9*c^2 + 6*b^10*c^2 - 16*a^9*c^3 + 160*a^8*b*c^3 - 128*a^7*b^2*c^ \\
& 3 - 384*a^6*b^3*c^3 + 338*a^5*b^4*c^3 + 176*a^4*b^5*c^3 - 60*a^3*b^6*c^3 - \\
& 32*a^2*b^7*c^3 - 54*a*b^8*c^3 - 96*a^8*c^4 + 416*a^7*b*c^4 - 112*a^6*b^2*c^ \\
& 4 - 504*a^5*b^3*c^4 + 70*a^4*b^4*c^4 + 46*a^3*b^5*c^4 + 184*a^2*b^6*c^4 + 2 \\
& 2*a*b^7*c^4 - 18*b^8*c^4 - 224*a^7*c^5 + 480*a^6*b*c^5 + 96*a^5*b^2*c^5 - 7 \\
& 6*a^4*b^3*c^5 - 306*a^3*b^4*c^5 - 180*a^2*b^5*c^5 + 130*a*b^6*c^5 + 16*b^7* \\
& c^5 - 224*a^6*c^6 + 80*a^5*b*c^6 + 200*a^4*b^2*c^6 + 472*a^3*b^3*c^6 - 262* \\
& a^2*b^4*c^6 - 150*a*b^5*c^6 + 14*b^6*c^6 - 416*a^4*b*c^7 + 64*a^3*b^2*c^7 + \\
& 464*a^2*b^3*c^7 - 58*a*b^4*c^7 - 24*b^5*c^7 + 224*a^4*c^8 - 480*a^3*b*c^8 \\
& - 48*a^2*b^2*c^8 + 152*a*b^3*c^8 + 2*b^4*c^8 + 224*a^3*c^9 - 224*a^2*b*c^9 \\
& - 32*a*b^2*c^9 + 10*b^3*c^9 + 96*a^2*c^10 - 40*a*b*c^10 - 4*b^2*c^10 + 16*a \\
& *c^11 + 3*sqrt(a^2 - a*b + b*c - c^2 + sqrt(b^2 - 4*a*c))*(a - b + c))*sqrt( \\
& b^2 - 4*a*c)*a^7*b^3 - 2*(b^2 - 4*a*c)*a^7*b^3 - 2*sqrt(a^2 - a*b + b*c - c \\
& ^2 + sqrt(b^2 - 4*a*c))*(a - b + c))*sqrt(b^2 - 4*a*c)*a^6*b^4 + 4*(b^2 - 4* \\
& a*c)*a^6*b^4 - 11*sqrt(a^2 - a*b + b*c - c^2 + sqrt(b^2 - 4*a*c))*(a - b + c) \\
& ))*sqrt(b^2 - 4*a*c)*a^5*b^5 + 2*(b^2 - 4*a*c)*a^5*b^5 + 4*sqrt(a^2 - a*b + \\
& b*c - c^2 + sqrt(b^2 - 4*a*c))*(a - b + c))*sqrt(b^2 - 4*a*c)*a^4*b^6 - 8*( \\
& b^2 - 4*a*c)*a^4*b^6 + 13*sqrt(a^2 - a*b + b*c - c^2 + sqrt(b^2 - 4*a*c))*(a \\
& - b + c))*sqrt(b^2 - 4*a*c)*a^3*b^7 + 2*(b^2 - 4*a*c)*a^3*b^7 - 2*sqrt(a^2 \\
& - a*b + b*c - c^2 + sqrt(b^2 - 4*a*c))*(a - b + c))*sqrt(b^2 - 4*a*c)*a^2*b \\
& ^8 + 4*(b^2 - 4*a*c)*a^2*b^8 - 5*sqrt(a^2 - a*b + b*c - c^2 + sqrt(b^2 - 4* \\
& a*c))*(a - b + c))*sqrt(b^2 - 4*a*c)*a*b^9 - 2*(b^2 - 4*a*c)*a*b^9 - 9*sqrt( \\
& a^2 - a*b + b*c - c^2 + sqrt(b^2 - 4*a*c))*(a - b + c))*sqrt(b^2 - 4*a*c)*a^ \\
& 8*b*c + 6*(b^2 - 4*a*c)*a^8*b*c + 3*sqrt(a^2 - a*b + b*c - c^2 + sqrt(b^2 - \\
& 4*a*c))*(a - b + c))*sqrt(b^2 - 4*a*c)*a^7*b^2*c - 10*(b^2 - 4*a*c)*a^7*b^2 \\
& *c + 58*sqrt(a^2 - a*b + b*c - c^2 + sqrt(b^2 - 4*a*c))*(a - b + c))*sqrt(b^ \\
& 2 - 4*a*c)*a^6*b^3*c - 20*(b^2 - 4*a*c)*a^6*b^3*c - sqrt(a^2 - a*b + b*c - \\
& c^2 + sqrt(b^2 - 4*a*c))*(a - b + c))*sqrt(b^2 - 4*a*c)*a^5*b^4*c + 38*(b^2 \\
& - 4*a*c)*a^5*b^4*c - 92*sqrt(a^2 - a*b + b*c - c^2 + sqrt(b^2 - 4*a*c))*(a - \\
& b + c))*sqrt(b^2 - 4*a*c)*a^4*b^5*c + 8*(b^2 - 4*a*c)*a^4*b^5*c - 15*sqrt( \\
& a^2 - a*b + b*c - c^2 + sqrt(b^2 - 4*a*c))*(a - b + c))*sqrt(b^2 - 4*a*c)*a^ \\
& 3*b^6*c - 30*(b^2 - 4*a*c)*a^3*b^6*c + 38*sqrt(a^2 - a*b + b*c - c^2 + sqrt
\end{aligned}$$

$$\begin{aligned}
& (b^2 - 4ac)(a - b + c)\sqrt{b^2 - 4ac}a^2b^7c + 4(b^2 - 4ac)a^2b^7c + 13\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c)\sqrt{b^2 - 4ac}ab^8c + 2(b^2 - 4ac)a^2b^8c + 5\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c)\sqrt{b^2 - 4ac}b^9c + 2(b^2 - 4ac)a^2b^9c + 6\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c)\sqrt{b^2 - 4ac}a^8c^2 - 4(b^2 - 4ac)a^8c^2 - 76\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c)\sqrt{b^2 - 4ac}a^7b^2c^2 + 40(b^2 - 4ac)a^7b^2c^2 - 43\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c)\sqrt{b^2 - 4ac}a^6b^2c^2 - 38(b^2 - 4ac)a^6b^2c^2 + 209\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c)\sqrt{b^2 - 4ac}a^5b^3c^2 - 70(b^2 - 4ac)a^5b^3c^2 + 109\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c)\sqrt{b^2 - 4ac}a^4b^4c^2 + 74(b^2 - 4ac)a^4b^4c^2 - 94\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c)\sqrt{b^2 - 4ac}a^3b^5c^2 + 20(b^2 - 4ac)a^3b^5c^2 - 69\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c)\sqrt{b^2 - 4ac}a^2b^6c^2 - 10(b^2 - 4ac)a^2b^6c^2 - 47\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c)\sqrt{b^2 - 4ac}ab^7c^2 - 6(b^2 - 4ac)ab^7c^2 - 11\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c)\sqrt{b^2 - 4ac}b^8c^2 - 6(b^2 - 4ac)b^8c^2 + 52\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c)\sqrt{b^2 - 4ac}a^7c^3 - 24(b^2 - 4ac)a^7c^3 - 156\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c)\sqrt{b^2 - 4ac}a^6b^2c^3 + 104(b^2 - 4ac)a^6b^2c^3 - 205\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c)\sqrt{b^2 - 4ac}a^5b^2c^3 - 42(b^2 - 4ac)a^5b^2c^3 + 100\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c)\sqrt{b^2 - 4ac}a^4b^3c^3 - 96(b^2 - 4ac)a^4b^3c^3 + 162\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c)\sqrt{b^2 - 4ac}a^3b^4c^3 + 20(b^2 - 4ac)a^3b^4c^3 + 148\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c)\sqrt{b^2 - 4ac}a^2b^5c^3 + 8(b^2 - 4ac)a^2b^5c^3 + 47\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c)\sqrt{b^2 - 4ac}ab^6c^3 + 30(b^2 - 4ac)ab^6c^3 - 4\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c)\sqrt{b^2 - 4ac}b^7c^3 + 132\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c)\sqrt{b^2 - 4ac}a^6c^4 - 56(b^2 - 4ac)a^6c^4 - 36\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c)\sqrt{b^2 - 4ac}a^5b^2c^4 + 120(b^2 - 4ac)a^5b^2c^4 - 211\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c)\sqrt{b^2 - 4ac}a^4b^2c^4 + 10(b^2 - 4ac)a^4b^2c^4 - 251\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c)\sqrt{b^2 - 4ac}a^3b^3c^4 - 14(b^2 - 4ac)a^3b^3c^4 - 84\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c)\sqrt{b^2 - 4ac}a^2b^4c^4 - 64(b^2 - 4ac)a^2b^4c^4 + 73\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c)\sqrt{b^2 - 4ac}ab^5c^4 - 22(b^2 - 4ac)ab^5c^4 + 33\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c)\sqrt{b^2 - 4ac}b^6c^4 + 18(b^2 - 4ac)b^6c^4 + 100\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c)\sqrt{b^2 - 4ac}a^5c^5 - 56(b^2 - 4ac)a^5c^5 + 194\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c)\sqrt{b^2 - 4ac}
\end{aligned}$$

$$\begin{aligned}
& 2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}*(a - b + c))*\sqrt{b^2 - 4*a*c}*a^4* \\
& b*c^5 + 20*(b^2 - 4*a*c)*a^4*b*c^5 + 113*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}}* \\
& \sqrt{b^2 - 4*a*c}*(a - b + c))*\sqrt{b^2 - 4*a*c}*a^3*b^2*c^5 + 50*(b^2 - 4*a*c)* \\
& a^3*b^2*c^5 - 198*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}}*(a - b + c) \\
& ))*\sqrt{b^2 - 4*a*c}*a^2*b^3*c^5 + 92*(b^2 - 4*a*c)*a^2*b^3*c^5 - 161*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}}*(a - b + c))*\sqrt{b^2 - 4*a*c}*a* \\
& b^4*c^5 - 58*(b^2 - 4*a*c)*a*b^4*c^5 - 24*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}}*(b^2 - 4*a*c)*(a - b + c))*\sqrt{b^2 - 4*a*c}*b^5*c^5 - 16*(b^2 - 4*a*c)*b^5 \\
& *c^5 - 80*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}}*(a - b + c))*\sqrt{b^2 - 4*a*c}*a^4*c^6 + 172*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}}*(a - b + c))*\sqrt{b^2 - 4*a*c}*a^3*b*c^6 - 104*(b^2 - 4*a*c)*a^3*b*c^6 + 263 \\
& *\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}}*(a - b + c))*\sqrt{b^2 - 4*a*c}*a^2*b^2*c^6 + 30*(b^2 - 4*a*c)*a^2*b^2*c^6 + 39*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}}*(a - b + c))*\sqrt{b^2 - 4*a*c}*a*b^3*c^6 + 86*(b^2 - 4*a*c)*a*b^3*c^6 - 23*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}}*(a - b + c))*\sqrt{b^2 - 4*a*c}*b^4*c^6 - 14*(b^2 - 4*a*c)*b^4*c^6 - 164*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}}*(a - b + c))*\sqrt{b^2 - 4*a*c}*a^3*c^7 + 56*(b^2 - 4*a*c)*a^3*c^7 - 12*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}}*(a - b + c))*\sqrt{b^2 - 4*a*c}*a^2*b*c^7 - 120*(b^2 - 4*a*c)*a^2*b*c^7 + 89*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}}*(a - b + c))*\sqrt{b^2 - 4*a*c}*a*b^2*c^7 + 2*(b^2 - 4*a*c)*a*b^2*c^7 + 40*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}}*(a - b + c))*\sqrt{b^2 - 4*a*c}*b^3*c^7 + 24*(b^2 - 4*a*c)*b^3*c^7 - 68*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}}*(a - b + c))*\sqrt{b^2 - 4*a*c}*a^2*c^8 + 56*(b^2 - 4*a*c)*a^2*c^8 - 60*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}}*(a - b + c))*\sqrt{b^2 - 4*a*c}*a*b*c^8 - 56*(b^2 - 4*a*c)*a*b*c^8 - 9*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}}*(a - b + c))*\sqrt{b^2 - 4*a*c}*b^2*c^8 - 2*(b^2 - 4*a*c)*b^2*c^8 + 12*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}}*(a - b + c))*\sqrt{b^2 - 4*a*c}*a*c^9 + 24*(b^2 - 4*a*c)*a*c^9 - 17*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}}*(a - b + c))*\sqrt{b^2 - 4*a*c}*b*c^9 - 10*(b^2 - 4*a*c)*b*c^9 + 10*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}}*(a - b + c))*\sqrt{b^2 - 4*a*c}*c^10 + 4*(b^2 - 4*a*c)*c^10)*abs(-a + b - c))*(pi*floor(1/2*x/pi + 1/2) + arctan(2*\sqrt{1/2})*tan(1/2*x)/\sqrt{((2*a^3 - 2*a*b^2 + 2*a^2*c + 2*b^2*c - 2*a*c^2 - 2*c^3 - \sqrt{-4*(a^3 + a^2*b - a*b^2 - b^3 + 3*a^2*c + 2*a*b*c - b^2*c + 3*a*c^2 + b*c^2 + c^3)}*(a^3 - a^2*b - a*b^2 + b^3 + 3*a^2*c - 2*a*b*c - b^2*c + 3*a*c^2 - b*c^2 + c^3) + 4*(a^3 - a*b^2 + a^2*c + b^2*c - a*c^2 - c^3)^2)))/(a^3 - a^2*b - a*b^2 + b^3 + 3*a^2*c - 2*a*b*c - b^2*c + 3*a*c^2 - b*c^2 + c^3)))/((3*a^10*b^2 - 8*a^9*b^3 - 7*a^8*b^4 + 32*a^7*b^5 - 2*a^6*b^6 - 48*a^5*b^7 + 18*a^4*b^8 + 32*a^3*b^9 - 17*a^2*b^10 - 8*a*b^11 + 5*b^12 - 12*a^11*c + 32*a^10*b*c + 66*a^9*b^2*c - 208*a^8*b^3*c - 80*a^7*b^4*c + 448*a^6*b^5*c - 36*a^5*b^6*c - 416*a^4*b^7*c + 108*a^3*b^8*c + 160*a^2*b^9*c - 46*a*b^10*c - 16*b^11*c - 152*a^10*c^2 + 320*a^9*b*c^2 + 543*a^8*b^2*c^2 - 1344*a^7*b^3*c^2 - 532*a^6*b^4*c^2 + 1920*a^5*b^5*c^2 + 50*a^4*b^6*c^2 - 1088*a^3*b^7*c^2 + 84*a^2*b^8*c^2 + 192*a*b^9*c^2 + 7*b^10*c^2 - 764*a^9*c^3 + 1280*a^8*b*c^3 + 2072*a^7*b^2*c^3 - 3744*a^6*b^3*c^3 - 1712*
\end{aligned}$$

$a^5b^4c^3 + 3424a^4b^5c^3 + 520a^3b^6c^3 - 992a^2b^7c^3 - 116ab^8c^3 + 32b^9c^3 - 2080a^8c^4 + 2688a^7b^2c^4 + 4342a^6b^2c^4 - 264a^5b^3c^4 - 2890a^4b^4c^4 + 2720a^3b^5c^4 + 802a^2b^6c^4 - 272ab^7c^4 - 46b^8c^4 - 3416a^7c^5 + 3136a^6b^2c^5 + 5388a^5b^2c^5 - 3648a^4b^3c^5 - 2672a^3b^4c^5 + 768a^2b^5c^5 + 412ab^6c^5 - 3472a^6c^6 + 1792a^5b^2c^6 + 4006a^4b^2c^6 - 768a^3b^3c^6 - 1300a^2b^4c^6 - 64ab^5c^6 + 46b^6c^6 - 2072a^5c^7 + 1688a^3b^2c^7 + 416a^2b^3c^7 - 272ab^4c^7 - 32b^5c^7 - 544a^4c^8 - 640a^3b^2c^8 + 327a^2b^2c^8 + 216ab^3c^8 - 7b^4c^8 + 100a^3c^9 - 352a^2b^2c^9 + 2ab^2c^9 + 16b^3c^9 + 104a^2c^{10} - 64ab^2c^{10} - 5b^2c^{10} + 20ac^{11})\text{abs}(-a^2 + b^2 - 2ac - c^2) + 1/2\tan(1/2x)/(a - b + c) - 1/2/((a + b + c)\tan(1/2x))$

### Mupad [B] (verification not implemented)

Time = 15.47 (sec) , antiderivative size = 39229, normalized size of antiderivative = 120.33

$$\int \frac{\csc^2(x)}{a + b \cos(x) + c \cos^2(x)} dx = \text{Too large to display}$$

[In] int(1/(sin(x)^2\*(a + b\*cos(x) + c\*cos(x)^2)),x)

[Out] atan((((-(8\*a\*c^7 + b^8 + 24\*a^2\*c^6 + 24\*a^3\*c^5 + 8\*a^4\*c^4 + b^5\*(-(4\*a\*c - b^2)^3))^(1/2) - 2\*b^2\*c^6 + 3\*b^4\*c^4 - 3\*b^6\*c^2 - 18\*a\*b^2\*c^5 + 24\*a\*b^4\*c^3 + 3\*b\*c^4\*(-(4\*a\*c - b^2)^3))^(1/2) - 54\*a^2\*b^2\*c^4 + 33\*a^2\*b^4\*c^2 - 38\*a^3\*b^2\*c^3 - 3\*b^3\*c^2\*(-(4\*a\*c - b^2)^3))^(1/2) - 10\*a\*b^6\*c + 3\*a^2\*b\*c^2\*(-(4\*a\*c - b^2)^3))^(1/2) + 6\*a\*b\*c^3\*(-(4\*a\*c - b^2)^3))^(1/2) - 4\*a\*b^3\*c\*(-(4\*a\*c - b^2)^3))^(1/2))/(2\*(3\*a^2\*b^8 - b^10 - 3\*a^4\*b^6 + a^6\*b^4 + 16\*a^2\*c^8 + 96\*a^3\*c^7 + 240\*a^4\*c^6 + 320\*a^5\*c^5 + 240\*a^6\*c^4 + 96\*a^7\*c^3 + 16\*a^8\*c^2 + b^4\*c^6 - 3\*b^6\*c^4 + 3\*b^8\*c^2 - 8\*a\*b^2\*c^7 + 30\*a\*b^4\*c^5 - 36\*a\*b^6\*c^3 - 36\*a^3\*b^6\*c + 30\*a^5\*b^4\*c - 8\*a^7\*b^2\*c - 96\*a^2\*b^2\*c^6 + 159\*a^2\*b^4\*c^4 - 82\*a^2\*b^6\*c^2 - 312\*a^3\*b^2\*c^5 + 260\*a^3\*b^4\*c^3 - 448\*a^4\*b^2\*c^4 + 159\*a^4\*b^4\*c^2 - 312\*a^5\*b^2\*c^3 - 96\*a^6\*b^2\*c^2 + 14\*a\*b^8\*c)))^(1/2)\*(128\*a\*c^13 - 64\*a\*b^13 - 32\*b^13\*c + 32\*b^14 - 96\*a^2\*b^12 + 256\*a^3\*b^11 + 64\*a^4\*b^10 - 384\*a^5\*b^9 + 64\*a^6\*b^8 + 256\*a^7\*b^7 - 96\*a^8\*b^6 - 64\*a^9\*b^5 + 32\*a^10\*b^4 + 1408\*a^2\*c^12 + 7040\*a^3\*c^11 + 21120\*a^4\*c^10 + 42240\*a^5\*c^9 + 59136\*a^6\*c^8 + 59136\*a^7\*c^7 + 42240\*a^8\*c^6 + 21120\*a^9\*c^5 + 7040\*a^10\*c^4 + 1408\*a^11\*c^3 + 128\*a^12\*c^2 - 32\*b^2\*c^12 + 96\*b^3\*c^11 + 64\*b^4\*c^10 - 416\*b^5\*c^9 + 96\*b^6\*c^8 + 704\*b^7\*c^7 - 384\*b^8\*c^6 - 576\*b^9\*c^5 + 416\*b^10\*c^4 + 224\*b^11\*c^3 - 192\*b^12\*c^2 + tan(x/2)\*(-(8\*a\*c^7 + b^8 + 24\*a^2\*c^6 + 24\*a^3\*c^5 + 8\*a^4\*c^4 + b^5\*(-(4\*a\*c - b^2)^3))^(1/2) - 2\*b^2\*c^6 + 3\*b^4\*c^4 - 3\*b^6\*c^2 - 18\*a\*b^2\*c^5 + 24\*a\*b^4\*c^3 + 3\*b\*c^4\*(-(4\*a\*c - b^2)^3))^(1/2) - 54\*a^2\*b^2\*c^4 + 33\*a^2\*b^4\*c^2 - 38\*a^3\*b^2\*c^3 - 3\*b^3\*c^2\*(-(4\*a\*c - b^2)^3))^(1/2) - 10\*a\*b^6\*c + 3\*a^2\*b\*c^2\*(-(4\*a\*c - b^2)^3))^(1/2) + 6\*a\*b\*c^3\*(-(4\*a\*c - b^2)^3))^(1/2)



$$\begin{aligned}
& - 4*a*b^3*c*(-(4*a*c - b^2)^3)^{(1/2)}/(2*(3*a^2*b^8 - b^{10} - 3*a^4*b^6 + a \\
& ^6*b^4 + 16*a^2*c^8 + 96*a^3*c^7 + 240*a^4*c^6 + 320*a^5*c^5 + 240*a^6*c^4 \\
& + 96*a^7*c^3 + 16*a^8*c^2 + b^4*c^6 - 3*b^6*c^4 + 3*b^8*c^2 - 8*a*b^2*c^7 + \\
& 30*a*b^4*c^5 - 36*a*b^6*c^3 - 36*a^3*b^6*c + 30*a^5*b^4*c - 8*a^7*b^2*c - \\
& 96*a^2*b^2*c^6 + 159*a^2*b^4*c^4 - 82*a^2*b^6*c^2 - 312*a^3*b^2*c^5 + 260*a \\
& ^3*b^4*c^3 - 448*a^4*b^2*c^4 + 159*a^4*b^4*c^2 - 312*a^5*b^2*c^3 - 96*a^6*b \\
& ^2*c^2 + 14*a*b^8*c))^{(1/2)}*(64*a*b^{14} - 256*a*c^{14} + 256*a^{14}*c - 64*b^{14} \\
& *c - 128*a^2*b^{13} - 256*a^3*b^{12} + 640*a^4*b^{11} + 320*a^5*b^{10} - 1280*a^6*b \\
& ^9 + 1280*a^8*b^7 - 320*a^9*b^6 - 640*a^{10}*b^5 + 256*a^{11}*b^4 + 128*a^{12}*b^ \\
& 3 - 64*a^{13}*b^2 - 2816*a^2*c^{13} - 13824*a^3*c^{12} - 39424*a^4*c^{11} - 70400*a \\
& ^5*c^{10} - 76032*a^6*c^9 - 33792*a^7*c^8 + 33792*a^8*c^7 + 76032*a^9*c^6 + 7 \\
& 0400*a^{10}*c^5 + 39424*a^{11}*c^4 + 13824*a^{12}*c^3 + 2816*a^{13}*c^2 + 64*b^2*c^ \\
& 13 - 128*b^3*c^{12} - 256*b^4*c^{11} + 640*b^5*c^{10} + 320*b^6*c^9 - 1280*b^7*c^ \\
& 8 + 1280*b^9*c^6 - 320*b^{10}*c^5 - 640*b^{11}*c^4 + 256*b^{12}*c^3 + 128*b^{13}*c^ \\
& 2 + 1728*a*b^2*c^{12} - 3840*a*b^3*c^{11} - 3584*a*b^4*c^{10} + 10240*a*b^5*c^9 + \\
& 2240*a*b^6*c^8 - 12800*a*b^7*c^7 + 1280*a*b^8*c^6 + 7680*a*b^9*c^5 - 1984* \\
& a*b^{10}*c^4 - 1792*a*b^{11}*c^3 + 512*a*b^{12}*c^2 + 5120*a^2*b*c^{12} - 512*a^2*b \\
& ^{12}*c + 22528*a^3*b*c^{11} + 1792*a^3*b^{11}*c + 56320*a^4*b*c^{10} + 1984*a^4*b^ \\
& 10*c + 84480*a^5*b*c^9 - 7680*a^5*b^9*c + 67584*a^6*b*c^8 - 1280*a^6*b^8*c \\
& + 12800*a^7*b^7*c - 67584*a^8*b*c^6 - 2240*a^8*b^6*c - 84480*a^9*b*c^5 - 10 \\
& 240*a^9*b^5*c - 56320*a^{10}*b*c^4 + 3584*a^{10}*b^4*c - 22528*a^{11}*b*c^3 + 384 \\
& 0*a^{11}*b^3*c - 5120*a^{12}*b*c^2 - 1728*a^{12}*b^2*c + 12672*a^2*b^2*c^{11} - 261 \\
& 12*a^2*b^3*c^{10} - 17920*a^2*b^4*c^9 + 48000*a^2*b^5*c^8 + 6400*a^2*b^6*c^7 \\
& - 38400*a^2*b^7*c^6 + 3840*a^2*b^8*c^5 + 11520*a^2*b^9*c^4 - 1664*a^2*b^{10}* \\
& c^3 + 45696*a^3*b^2*c^{10} - 83200*a^3*b^3*c^9 - 44800*a^3*b^4*c^8 + 102400*a \\
& ^3*b^5*c^7 + 8960*a^3*b^6*c^6 - 43520*a^3*b^7*c^5 + 2560*a^3*b^8*c^4 + 1664 \\
& *a^3*b^{10}*c^2 + 94400*a^4*b^2*c^9 - 144000*a^4*b^3*c^8 - 58880*a^4*b^4*c^7 \\
& + 98560*a^4*b^5*c^6 + 4480*a^4*b^6*c^5 - 2560*a^4*b^8*c^3 - 11520*a^4*b^9*c \\
& ^2 + 111168*a^5*b^2*c^8 - 124416*a^5*b^3*c^7 - 28672*a^5*b^4*c^6 - 4480*a^5 \\
& *b^6*c^4 + 43520*a^5*b^7*c^3 - 3840*a^5*b^8*c^2 + 51456*a^6*b^2*c^7 + 28672 \\
& *a^6*b^4*c^5 - 98560*a^6*b^5*c^4 - 8960*a^6*b^6*c^3 + 38400*a^6*b^7*c^2 - 5 \\
& 1456*a^7*b^2*c^6 + 124416*a^7*b^3*c^5 + 58880*a^7*b^4*c^4 - 102400*a^7*b^5* \\
& c^3 - 6400*a^7*b^6*c^2 - 111168*a^8*b^2*c^5 + 144000*a^8*b^3*c^4 + 44800*a^ \\
& 8*b^4*c^3 - 48000*a^8*b^5*c^2 - 94400*a^9*b^2*c^4 + 83200*a^9*b^3*c^3 + 179 \\
& 20*a^9*b^4*c^2 - 45696*a^{10}*b^2*c^3 + 26112*a^{10}*b^3*c^2 - 12672*a^{11}*b^2*c \\
& ^2 + 512*a*b*c^{13} - 512*a^{13}*b*c) - 608*a*b^2*c^{11} + 2624*a*b^3*c^{10} + 224* \\
& a*b^4*c^9 - 6208*a*b^5*c^8 + 2112*a*b^6*c^7 + 6784*a*b^7*c^6 - 3520*a*b^8*c \\
& ^5 - 3584*a*b^9*c^4 + 2080*a*b^{10}*c^3 + 832*a*b^{11}*c^2 - 3840*a^2*b*c^{11} + \\
& 992*a^2*b^{11}*c - 17280*a^3*b*c^{10} + 992*a^3*b^{10}*c - 46080*a^4*b*c^9 - 3136 \\
& *a^4*b^9*c - 80640*a^5*b*c^8 - 320*a^5*b^8*c - 96768*a^6*b*c^7 + 3776*a^6*b \\
& ^7*c - 80640*a^7*b*c^6 - 832*a^7*b^6*c - 46080*a^8*b*c^5 - 1952*a^8*b^5*c - \\
& 17280*a^9*b*c^4 + 736*a^9*b^4*c - 3840*a^{10}*b*c^3 + 352*a^{10}*b^3*c - 384*a \\
& ^{11}*b*c^2 - 160*a^{11}*b^2*c - 4192*a^2*b^2*c^{10} + 17888*a^2*b^3*c^9 + 288*a^ \\
& 2*b^4*c^8 - 30080*a^2*b^5*c^7 + 8768*a^2*b^6*c^6 + 22848*a^2*b^7*c^5 - 8768 \\
& *a^2*b^8*c^4 - 7808*a^2*b^9*c^3 + 2592*a^2*b^{10}*c^2 - 15648*a^3*b^2*c^9 + 6
\end{aligned}$$

$$\begin{aligned}
& 0160*a^3*b^3*c^8 + 1152*a^3*b^4*c^7 - 73472*a^3*b^5*c^6 + 15424*a^3*b^6*c^5 \\
& + 37888*a^3*b^7*c^4 - 8960*a^3*b^8*c^3 - 7552*a^3*b^9*c^2 - 36672*a^4*b^2* \\
& c^8 + 120512*a^4*b^3*c^7 + 5376*a^4*b^4*c^6 - 104384*a^4*b^5*c^5 + 12800*a^ \\
& 4*b^6*c^4 + 34112*a^4*b^7*c^3 - 3712*a^4*b^8*c^2 - 57792*a^5*b^2*c^7 + 1550 \\
& 08*a^5*b^3*c^6 + 12096*a^5*b^4*c^5 - 90496*a^5*b^5*c^4 + 3776*a^5*b^6*c^3 + \\
& 16512*a^5*b^7*c^2 - 63168*a^6*b^2*c^6 + 131264*a^6*b^3*c^5 + 14784*a^6*b^4 \\
& *c^4 - 47488*a^6*b^5*c^3 - 1088*a^6*b^6*c^2 - 48192*a^7*b^2*c^5 + 72448*a^7 \\
& *b^3*c^4 + 10368*a^7*b^4*c^3 - 14080*a^7*b^5*c^2 - 25248*a^8*b^2*c^4 + 2480 \\
& 0*a^8*b^3*c^3 + 4032*a^8*b^4*c^2 - 8672*a^9*b^2*c^3 + 4672*a^9*b^3*c^2 - 17 \\
& 60*a^10*b^2*c^2 - 384*a*b*c^12 - 416*a*b^12*c) + \tan(x/2)*(32*a*b^12 - 512* \\
& a*c^12 + 128*b*c^12 + 96*b^12*c - 32*b^13 - 64*c^13 + 96*a^2*b^11 - 96*a^3* \\
& b^10 - 96*a^4*b^9 + 96*a^5*b^8 + 32*a^6*b^7 - 32*a^7*b^6 - 1728*a^2*c^11 - \\
& 3072*a^3*c^10 - 2688*a^4*c^9 + 2688*a^6*c^7 + 3072*a^7*c^6 + 1728*a^8*c^5 + \\
& 512*a^9*c^4 + 64*a^10*c^3 + 160*b^2*c^11 - 544*b^3*c^10 + 64*b^4*c^9 + 896 \\
& *b^5*c^8 - 608*b^6*c^7 - 672*b^7*c^6 + 800*b^8*c^5 + 160*b^9*c^4 - 448*b^10 \\
& *c^3 + 64*b^11*c^2 + 480*a*b^2*c^10 - 4352*a*b^3*c^9 + 2560*a*b^4*c^8 + 524 \\
& 8*a*b^5*c^7 - 5664*a*b^6*c^6 - 2240*a*b^7*c^5 + 4320*a*b^8*c^4 - 256*a*b^9* \\
& c^3 - 1216*a*b^10*c^2 + 5632*a^2*b*c^10 - 672*a^2*b^10*c + 14336*a^3*b*c^9 \\
& - 768*a^3*b^9*c + 23296*a^4*b*c^8 + 1248*a^4*b^8*c + 25088*a^5*b*c^7 + 576* \\
& a^5*b^7*c + 17920*a^6*b*c^6 - 864*a^6*b^6*c + 8192*a^7*b*c^5 - 128*a^7*b^5* \\
& c + 2176*a^8*b*c^4 + 192*a^8*b^4*c + 256*a^9*b*c^3 - 1408*a^2*b^2*c^9 - 147 \\
& 20*a^2*b^3*c^8 + 13440*a^2*b^4*c^7 + 11904*a^2*b^5*c^6 - 16800*a^2*b^6*c^5 \\
& - 1696*a^2*b^7*c^4 + 7168*a^2*b^8*c^3 - 1216*a^2*b^9*c^2 - 9856*a^3*b^2*c^8 \\
& - 27392*a^3*b^3*c^7 + 31232*a^3*b^4*c^6 + 12928*a^3*b^5*c^5 - 23264*a^3*b^ \\
& 6*c^4 + 1152*a^3*b^7*c^3 + 4800*a^3*b^8*c^2 - 22848*a^4*b^2*c^7 - 30400*a^4 \\
& *b^3*c^6 + 39680*a^4*b^4*c^5 + 6272*a^4*b^5*c^4 - 16544*a^4*b^6*c^3 + 1824* \\
& a^4*b^7*c^2 - 29120*a^5*b^2*c^6 - 20224*a^5*b^3*c^5 + 29184*a^5*b^4*c^4 + 3 \\
& 84*a^5*b^5*c^3 - 5856*a^5*b^6*c^2 - 22400*a^6*b^2*c^5 - 7552*a^6*b^3*c^4 + \\
& 12160*a^6*b^4*c^3 - 640*a^6*b^5*c^2 - 10368*a^7*b^2*c^4 - 1280*a^7*b^3*c^3 \\
& + 2560*a^7*b^4*c^2 - 2656*a^8*b^2*c^3 - 32*a^8*b^3*c^2 - 288*a^9*b^2*c^2 + \\
& 1280*a*b*c^11 + 320*a*b^11*c))*(-(8*a*c^7 + b^8 + 24*a^2*c^6 + 24*a^3*c^5 + \\
& 8*a^4*c^4 + b^5*(-(4*a*c - b^2)^3)^(1/2) - 2*b^2*c^6 + 3*b^4*c^4 - 3*b^6*c \\
& ^2 - 18*a*b^2*c^5 + 24*a*b^4*c^3 + 3*b*c^4*(-(4*a*c - b^2)^3)^(1/2) - 54*a^ \\
& 2*b^2*c^4 + 33*a^2*b^4*c^2 - 38*a^3*b^2*c^3 - 3*b^3*c^2*(-(4*a*c - b^2)^3)^( \\
& 1/2) - 10*a*b^6*c + 3*a^2*b*c^2*(-(4*a*c - b^2)^3)^(1/2) + 6*a*b*c^3*(-(4* \\
& a*c - b^2)^3)^(1/2) - 4*a*b^3*c*(-(4*a*c - b^2)^3)^(1/2))/(2*(3*a^2*b^8 - b \\
& ^10 - 3*a^4*b^6 + a^6*b^4 + 16*a^2*c^8 + 96*a^3*c^7 + 240*a^4*c^6 + 320*a^5 \\
& *c^5 + 240*a^6*c^4 + 96*a^7*c^3 + 16*a^8*c^2 + b^4*c^6 - 3*b^6*c^4 + 3*b^8* \\
& c^2 - 8*a*b^2*c^7 + 30*a*b^4*c^5 - 36*a*b^6*c^3 - 36*a^3*b^6*c + 30*a^5*b^4 \\
& *c - 8*a^7*b^2*c - 96*a^2*b^2*c^6 + 159*a^2*b^4*c^4 - 82*a^2*b^6*c^2 - 312* \\
& a^3*b^2*c^5 + 260*a^3*b^4*c^3 - 448*a^4*b^2*c^4 + 159*a^4*b^4*c^2 - 312*a^5 \\
& *b^2*c^3 - 96*a^6*b^2*c^2 + 14*a*b^8*c)))^(1/2)*i - (((- (8*a*c^7 + b^8 + 24 \\
& *a^2*c^6 + 24*a^3*c^5 + 8*a^4*c^4 + b^5*(-(4*a*c - b^2)^3)^(1/2) - 2*b^2*c^ \\
& 6 + 3*b^4*c^4 - 3*b^6*c^2 - 18*a*b^2*c^5 + 24*a*b^4*c^3 + 3*b*c^4*(-(4*a*c \\
& - b^2)^3)^(1/2) - 54*a^2*b^2*c^4 + 33*a^2*b^4*c^2 - 38*a^3*b^2*c^3 - 3*b^3*
\end{aligned}$$

$$\begin{aligned}
& c^2 * (- (4ac - b^2)^3)^{1/2} - 10ab^6c + 3a^2b^2c^2 * (- (4ac - b^2)^3)^{1/2} + 6ab^3c^3 * (- (4ac - b^2)^3)^{1/2} - 4ab^3c * (- (4ac - b^2)^3)^{1/2} \\
& \left( (2 * (3a^2b^8 - b^{10} - 3a^4b^6 + a^6b^4 + 16a^2c^8 + 96a^3c^7 + 240a^4c^6 + 320a^5c^5 + 240a^6c^4 + 96a^7c^3 + 16a^8c^2 + b^4c^6 - 3b^6c^4 + 3b^8c^2 - 8ab^2c^7 + 30ab^4c^5 - 36ab^6c^3 - 36a^3b^6c + 30a^5b^4c - 8a^7b^2c - 96a^2b^2c^6 + 159a^2b^4c^4 - 82a^2b^6c^2 - 312a^3b^2c^5 + 260a^3b^4c^3 - 448a^4b^2c^4 + 159a^4b^4c^2 - 312a^5b^2c^3 - 96a^6b^2c^2 + 14ab^8c) \right)^{1/2} \\
& * (128a^2c^{13} - 64ab^{13} - 32b^{13}c + 32b^{14} - 96a^2b^{12} + 256a^3b^{11} + 64a^4b^{10} - 384a^5b^9 + 64a^6b^8 + 256a^7b^7 - 96a^8b^6 - 64a^9b^5 + 32a^{10}b^4 + 1408a^2c^{12} + 7040a^3c^{11} + 21120a^4c^{10} + 42240a^5c^9 + 59136a^6c^8 + 59136a^7c^7 + 42240a^8c^6 + 21120a^9c^5 + 7040a^{10}c^4 + 1408a^{11}c^3 + 128a^{12}c^2 - 32b^2c^{12} + 96b^3c^{11} + 64b^4c^{10} - 416b^5c^9 + 96b^6c^8 + 704b^7c^7 - 384b^8c^6 - 576b^9c^5 + 416b^{10}c^4 + 224b^{11}c^3 - 192b^{12}c^2 - \tan(x/2) * (- (8a^7c + b^8 + 24a^2c^6 + 24a^3c^5 + 8a^4c^4 + b^5 * (- (4ac - b^2)^3)^{1/2} - 2b^2c^6 + 3b^4c^4 - 3b^6c^2 - 18ab^2c^5 + 24ab^4c^3 + 3b^2c^4 * (- (4ac - b^2)^3)^{1/2} - 54a^2b^2c^4 + 33a^2b^4c^2 - 38a^3b^2c^3 - 3b^3c^2 * (- (4ac - b^2)^3)^{1/2} - 10ab^6c + 3a^2b^2c^2 * (- (4ac - b^2)^3)^{1/2} + 6ab^3c^3 * (- (4ac - b^2)^3)^{1/2} - 4ab^3c * (- (4ac - b^2)^3)^{1/2} ) / (2 * (3a^2b^8 - b^{10} - 3a^4b^6 + a^6b^4 + 16a^2c^8 + 96a^3c^7 + 240a^4c^6 + 320a^5c^5 + 240a^6c^4 + 96a^7c^3 + 16a^8c^2 + b^4c^6 - 3b^6c^4 + 3b^8c^2 - 8ab^2c^7 + 30ab^4c^5 - 36ab^6c^3 - 36a^3b^6c + 30a^5b^4c - 8a^7b^2c - 96a^2b^2c^6 + 159a^2b^4c^4 - 82a^2b^6c^2 - 312a^3b^2c^5 + 260a^3b^4c^3 - 448a^4b^2c^4 + 159a^4b^4c^2 - 312a^5b^2c^3 - 96a^6b^2c^2 + 14ab^8c) ) )^{1/2} \\
& * (64ab^{14} - 256a^2c^{14} + 256a^{14}c - 64b^{14}c - 128a^2b^{13} - 256a^3b^{12} + 640a^4b^{11} + 320a^5b^{10} - 1280a^6b^9 + 1280a^8b^7 - 320a^9b^6 - 640a^{10}b^5 + 256a^{11}b^4 + 128a^{12}b^3 - 64a^{13}b^2 - 2816a^2c^{13} - 13824a^3c^{12} - 39424a^4c^{11} - 70400a^5c^{10} - 76032a^6c^9 - 33792a^7c^8 + 33792a^8c^7 + 76032a^9c^6 + 70400a^{10}c^5 + 39424a^{11}c^4 + 13824a^{12}c^3 + 2816a^{13}c^2 + 64b^2c^{13} - 128b^3c^{12} - 256b^4c^{11} + 640b^5c^{10} + 320b^6c^9 - 1280b^7c^8 + 1280b^9c^6 - 320b^{10}c^5 - 640b^{11}c^4 + 256b^{12}c^3 + 128b^{13}c^2 + 1728ab^2c^{12} - 3840ab^3c^{11} - 3584ab^4c^{10} + 10240ab^5c^9 + 2240ab^6c^8 - 12800ab^7c^7 + 1280ab^8c^6 + 7680ab^9c^5 - 1984ab^{10}c^4 - 1792ab^{11}c^3 + 512ab^{12}c^2 + 5120a^2b^2c^{12} - 512a^2b^{12}c + 22528a^3b^2c^{11} + 1792a^3b^{11}c + 56320a^4b^2c^{10} + 1984a^4b^{10}c + 84480a^5b^2c^9 - 7680a^5b^9c + 67584a^6b^2c^8 - 1280a^6b^8c + 12800a^7b^7c - 67584a^8b^2c^6 - 2240a^8b^6c - 84480a^9b^2c^5 - 10240a^9b^5c - 56320a^{10}b^2c^4 + 3584a^{10}b^4c - 22528a^{11}b^2c^3 + 3840a^{11}b^3c - 5120a^{12}b^2c^2 - 1728a^{12}b^2c + 12672a^2b^2c^{11} - 26112a^2b^3c^{10} - 17920a^2b^4c^9 + 48000a^2b^5c^8 + 6400a^2b^6c^7 - 38400a^2b^7c^6 + 3840a^2b^8c^5 + 11520a^2b^9c^4 - 1664a^2b^{10}c^3 + 45696a^3b^2c^{10} - 83200a^3b^3c^9 - 44800a^3b^4c^8 + 102400a^3b^5c^7 + 8960a^3b^6c^6
\end{aligned}$$

$$\begin{aligned}
& 6 - 43520a^3b^7c^5 + 2560a^3b^8c^4 + 1664a^3b^{10}c^2 + 94400a^4b^2c^9 - 144000a^4b^3c^8 - 58880a^4b^4c^7 + 98560a^4b^5c^6 + 4480a^4b^6c^5 - 2560a^4b^8c^3 - 11520a^4b^9c^2 + 111168a^5b^2c^8 - 124416a^5b^3c^7 - 28672a^5b^4c^6 - 4480a^5b^6c^4 + 43520a^5b^7c^3 - 3840a^5b^8c^2 + 51456a^6b^2c^7 + 28672a^6b^4c^5 - 98560a^6b^5c^4 - 8960a^6b^6c^3 + 38400a^6b^7c^2 - 51456a^7b^2c^6 + 124416a^7b^3c^5 + 58880a^7b^4c^4 - 102400a^7b^5c^3 - 6400a^7b^6c^2 - 111168a^8b^2c^5 + 144000a^8b^3c^4 + 44800a^8b^4c^3 - 48000a^8b^5c^2 - 94400a^9b^2c^4 + 83200a^9b^3c^3 + 17920a^9b^4c^2 - 45696a^{10}b^2c^3 + 26112a^{10}b^3c^2 - 12672a^{11}b^2c^2 + 512a^*b^*c^{13} - 512a^{13}b^*c) - 608a^*b^2c^{11} + 2624a^*b^3c^{10} + 224a^*b^4c^9 - 6208a^*b^5c^8 + 2112a^*b^6c^7 + 6784a^*b^7c^6 - 3520a^*b^8c^5 - 3584a^*b^9c^4 + 2080a^*b^{10}c^3 + 832a^*b^{11}c^2 - 3840a^2b^*c^{11} + 992a^2b^{11}c - 17280a^3b^*c^{10} + 992a^3b^{10}c - 46080a^4b^*c^9 - 3136a^4b^9c - 80640a^5b^*c^8 - 320a^5b^8c - 96768a^6b^*c^7 + 3776a^6b^7c - 80640a^7b^*c^6 - 832a^7b^6c - 46080a^8b^*c^5 - 1952a^8b^5c - 17280a^9b^*c^4 + 736a^9b^4c - 3840a^{10}b^*c^3 + 352a^{10}b^3c - 384a^{11}b^*c^2 - 160a^{11}b^2c - 4192a^2b^2c^{10} + 17888a^2b^3c^9 + 288a^2b^4c^8 - 30080a^2b^5c^7 + 8768a^2b^6c^6 + 22848a^2b^7c^5 - 8768a^2b^8c^4 - 7808a^2b^9c^3 + 2592a^2b^{10}c^2 - 15648a^3b^2c^9 + 60160a^3b^3c^8 + 1152a^3b^4c^7 - 73472a^3b^5c^6 + 15424a^3b^6c^5 + 37888a^3b^7c^4 - 8960a^3b^8c^3 - 7552a^3b^9c^2 - 36672a^4b^2c^8 + 120512a^4b^3c^7 + 5376a^4b^4c^6 - 104384a^4b^5c^5 + 12800a^4b^6c^4 + 34112a^4b^7c^3 - 3712a^4b^8c^2 - 57792a^5b^2c^7 + 155008a^5b^3c^6 + 12096a^5b^4c^5 - 90496a^5b^5c^4 + 3776a^5b^6c^3 + 16512a^5b^7c^2 - 63168a^6b^2c^6 + 131264a^6b^3c^5 + 14784a^6b^4c^4 - 47488a^6b^5c^3 - 1088a^6b^6c^2 - 48192a^7b^2c^5 + 72448a^7b^3c^4 + 10368a^7b^4c^3 - 14080a^7b^5c^2 - 25248a^8b^2c^4 + 24800a^8b^3c^3 + 4032a^8b^4c^2 - 8672a^9b^2c^3 + 4672a^9b^3c^2 - 1760a^{10}b^2c^2 - 384a^*b^*c^{12} - 416a^*b^{12}c) - \tan(x/2)*(32a^*b^{12} - 512a^*c^{12} + 128b^*c^{12} + 96b^{12}c - 32b^{13} - 64c^{13} + 96a^2b^{11} - 96a^3b^{10} - 96a^4b^9 + 96a^5b^8 + 32a^6b^7 - 32a^7b^6 - 1728a^2c^{11} - 3072a^3c^{10} - 2688a^4c^9 + 2688a^6c^7 + 3072a^7c^6 + 1728a^8c^5 + 512a^9c^4 + 64a^{10}c^3 + 160b^2c^{11} - 544b^3c^{10} + 64b^4c^9 + 896b^5c^8 - 608b^6c^7 - 672b^7c^6 + 800b^8c^5 + 160b^9c^4 - 448b^{10}c^3 + 64b^{11}c^2 + 480a^*b^2c^{10} - 4352a^*b^3c^9 + 2560a^*b^4c^8 + 5248a^*b^5c^7 - 5664a^*b^6c^6 - 2240a^*b^7c^5 + 4320a^*b^8c^4 - 256a^*b^9c^3 - 1216a^*b^{10}c^2 + 5632a^2b^*c^{10} - 672a^2b^{10}c + 14336a^3b^*c^9 - 768a^3b^9c + 23296a^4b^*c^8 + 1248a^4b^8c + 25088a^5b^*c^7 + 576a^5b^7c + 17920a^6b^*c^6 - 864a^6b^6c + 8192a^7b^*c^5 - 128a^7b^5c + 2176a^8b^*c^4 + 192a^8b^4c + 256a^9b^*c^3 - 1408a^2b^2c^9 - 14720a^2b^3c^8 + 13440a^2b^4c^7 + 11904a^2b^5c^6 - 16800a^2b^6c^5 - 1696a^2b^7c^4 + 7168a^2b^8c^3 - 1216a^2b^9c^2 - 9856a^3b^2c^8 - 27392a^3b^3c^7 + 31232a^3b^4c^6 + 12928a^3b^5c^5 - 23264a^3b^6c^4 + 1152a^3b^7c^3 + 4800a^3b^8c^2 - 22848a^4b^2c^7 - 30400a^4b^3c^6 + 39680a^4b^4c^5
\end{aligned}$$

$$\begin{aligned}
& + 6272a^4b^5c^4 - 16544a^4b^6c^3 + 1824a^4b^7c^2 - 29120a^5b^2c^6 - 20224a^5b^3c^5 + 29184a^5b^4c^4 + 384a^5b^5c^3 - 5856a^5b^6c^2 - 22400a^6b^2c^5 - 7552a^6b^3c^4 + 12160a^6b^4c^3 - 640a^6b^5c^2 - 10368a^7b^2c^4 - 1280a^7b^3c^3 + 2560a^7b^4c^2 - 2656a^8b^2c^3 - 32a^8b^3c^2 - 288a^9b^2c^2 + 1280a^*b^*c^{11} + 320a^*b^{11}c) * (- (8a^*c^7 + b^8 + 24a^2c^6 + 24a^3c^5 + 8a^4c^4 + b^5 * (- (4a^*c - b^2)^3)^{1/2} - 2b^2c^6 + 3b^4c^4 - 3b^6c^2 - 18a^*b^2c^5 + 24a^*b^4c^3 + 3b^*c^4 * (- (4a^*c - b^2)^3)^{1/2} - 54a^2b^2c^4 + 33a^2b^4c^2 - 38a^3b^2c^3 - 3b^3c^2 * (- (4a^*c - b^2)^3)^{1/2} - 10a^*b^6c + 3a^2b^*c^2 * (- (4a^*c - b^2)^3)^{1/2} + 6a^*b^*c^3 * (- (4a^*c - b^2)^3)^{1/2} - 4a^*b^3c * (- (4a^*c - b^2)^3)^{1/2}) / (2 * (3a^2b^8 - b^10 - 3a^4b^6 + a^6b^4 + 16a^2c^8 + 96a^3c^7 + 240a^4c^6 + 320a^5c^5 + 240a^6c^4 + 96a^7c^3 + 16a^8c^2 + b^4c^6 - 3b^6c^4 + 3b^8c^2 - 8a^*b^2c^7 + 30a^*b^4c^5 - 36a^*b^6c^3 - 36a^3b^6c + 30a^5b^4c - 8a^7b^2c - 96a^2b^2c^6 + 159a^2b^4c^4 - 82a^2b^6c^2 - 312a^3b^2c^5 + 260a^3b^4c^3 - 448a^4b^2c^4 + 159a^4b^4c^2 - 312a^5b^2c^3 - 96a^6b^2c^2 + 14a^*b^8c))^{1/2} * i) / (512a^*c^{11} + 64c^{12} + ((- (8a^*c^7 + b^8 + 24a^2c^6 + 24a^3c^5 + 8a^4c^4 + b^5 * (- (4a^*c - b^2)^3)^{1/2} - 2b^2c^6 + 3b^4c^4 - 3b^6c^2 - 18a^*b^2c^5 + 24a^*b^4c^3 + 3b^*c^4 * (- (4a^*c - b^2)^3)^{1/2} - 54a^2b^2c^4 + 33a^2b^4c^2 - 38a^3b^2c^3 - 3b^3c^2 * (- (4a^*c - b^2)^3)^{1/2} - 10a^*b^6c + 3a^2b^*c^2 * (- (4a^*c - b^2)^3)^{1/2} + 6a^*b^*c^3 * (- (4a^*c - b^2)^3)^{1/2} - 4a^*b^3c * (- (4a^*c - b^2)^3)^{1/2}) / (2 * (3a^2b^8 - b^10 - 3a^4b^6 + a^6b^4 + 16a^2c^8 + 96a^3c^7 + 240a^4c^6 + 320a^5c^5 + 240a^6c^4 + 96a^7c^3 + 16a^8c^2 + b^4c^6 - 3b^6c^4 + 3b^8c^2 - 8a^*b^2c^7 + 30a^*b^4c^5 - 36a^*b^6c^3 - 36a^3b^6c + 30a^5b^4c - 8a^7b^2c - 96a^2b^2c^6 + 159a^2b^4c^4 - 82a^2b^6c^2 - 312a^3b^2c^5 + 260a^3b^4c^3 - 448a^4b^2c^4 + 159a^4b^4c^2 - 312a^5b^2c^3 - 96a^6b^2c^2 + 14a^*b^8c))^{1/2} * (128a^*c^{13} - 64a^*b^{13} - 32b^{13}c + 32b^{14} - 96a^2b^{12} + 256a^3b^{11} + 64a^4b^{10} - 384a^5b^9 + 64a^6b^8 + 256a^7b^7 - 96a^8b^6 - 64a^9b^5 + 32a^{10}b^4 + 1408a^2c^{12} + 7040a^3c^{11} + 21120a^4c^{10} + 42240a^5c^9 + 59136a^6c^8 + 59136a^7c^7 + 42240a^8c^6 + 21120a^9c^5 + 7040a^{10}c^4 + 1408a^{11}c^3 + 128a^{12}c^2 - 32b^2c^{12} + 96b^3c^{11} + 64b^4c^{10} - 416b^5c^9 + 96b^6c^8 + 704b^7c^7 - 384b^8c^6 - 576b^9c^5 + 416b^{10}c^4 + 224b^{11}c^3 - 192b^{12}c^2 + \tan(x/2) * (- (8a^*c^7 + b^8 + 24a^2c^6 + 24a^3c^5 + 8a^4c^4 + b^5 * (- (4a^*c - b^2)^3)^{1/2} - 2b^2c^6 + 3b^4c^4 - 3b^6c^2 - 18a^*b^2c^5 + 24a^*b^4c^3 + 3b^*c^4 * (- (4a^*c - b^2)^3)^{1/2} - 54a^2b^2c^4 + 33a^2b^4c^2 - 38a^3b^2c^3 - 3b^3c^2 * (- (4a^*c - b^2)^3)^{1/2} - 10a^*b^6c + 3a^2b^*c^2 * (- (4a^*c - b^2)^3)^{1/2} + 6a^*b^*c^3 * (- (4a^*c - b^2)^3)^{1/2} - 4a^*b^3c * (- (4a^*c - b^2)^3)^{1/2}) / (2 * (3a^2b^8 - b^10 - 3a^4b^6 + a^6b^4 + 16a^2c^8 + 96a^3c^7 + 240a^4c^6 + 320a^5c^5 + 240a^6c^4 + 96a^7c^3 + 16a^8c^2 + b^4c^6 - 3b^6c^4 + 3b^8c^2 - 8a^*b^2c^7 + 30a^*b^4c^5 - 36a^*b^6c^3 - 36a^3b^6c + 30a^5b^4c - 8a^7b^2c - 96a^2b^2c^6 + 159a^2b^4c^4 - 82a^2b^6c^2 - 312a^3b^2c^5 + 260a^3b^4c^3 - 448a^4b^2c^4 + 15
\end{aligned}$$

$$\begin{aligned}
& 9a^4b^4c^2 - 312a^5b^2c^3 - 96a^6b^2c^2 + 14a^8b^8c))^{(1/2)} \cdot (64a^8b^14 - 256a^8c^14 + 256a^14c - 64b^14c - 128a^2b^13 - 256a^3b^12 \\
& + 640a^4b^11 + 320a^5b^10 - 1280a^6b^9 + 1280a^8b^7 - 320a^9b^6 - 640a^10b^5 + 256a^11b^4 + 128a^12b^3 - 64a^13b^2 - 2816a^2c^13 - \\
& 13824a^3c^12 - 39424a^4c^11 - 70400a^5c^10 - 76032a^6c^9 - 33792a^7c^8 + 33792a^8c^7 + 76032a^9c^6 + 70400a^10c^5 + 39424a^11c^4 + \\
& 13824a^12c^3 + 2816a^13c^2 + 64b^2c^13 - 128b^3c^12 - 256b^4c^11 + 640b^5c^10 + 320b^6c^9 - 1280b^7c^8 + 1280b^9c^6 - 320b^10c^5 - \\
& 640b^11c^4 + 256b^12c^3 + 128b^13c^2 + 1728a^2b^2c^12 - 3840a^2b^3c^11 - 3584a^2b^4c^10 + 10240a^2b^5c^9 + 2240a^2b^6c^8 - 12800a^2b^7c^7 \\
& + 1280a^2b^8c^6 + 7680a^2b^9c^5 - 1984a^2b^10c^4 - 1792a^2b^11c^3 + 512a^2b^12c^2 + 5120a^2b^13c - 512a^2b^12c + 22528a^3b^2c^11 + 1792a^3b^11c + 56320a^4b^2c^10 + 1984a^4b^10c + 84480a^5b^2c^9 - 7680a^5b^9c + 67584a^6b^2c^8 - 1280a^6b^8c + 12800a^7b^7c - 67584a^8b^2c^6 - 2240a^8b^6c - 84480a^9b^2c^5 - 10240a^9b^5c - 56320a^10b^2c^4 + 3584a^10b^4c - 22528a^11b^2c^3 + 3840a^11b^3c - 5120a^12b^2c^2 - 1728a^12b^2c + 12672a^2b^2c^11 - 26112a^2b^3c^10 - 17920a^2b^4c^9 + 48000a^2b^5c^8 + 6400a^2b^6c^7 - 38400a^2b^7c^6 + 3840a^2b^8c^5 + 11520a^2b^9c^4 - 1664a^2b^10c^3 + 45696a^3b^2c^10 - 83200a^3b^3c^9 - 44800a^3b^4c^8 + 102400a^3b^5c^7 + 8960a^3b^6c^6 - 43520a^3b^7c^5 + 2560a^3b^8c^4 + 1664a^3b^10c^2 + 94400a^4b^2c^9 - 144000a^4b^3c^8 - 58880a^4b^4c^7 + 98560a^4b^5c^6 + 4480a^4b^6c^5 - 2560a^4b^8c^3 - 11520a^4b^9c^2 + 111168a^5b^2c^8 - 124416a^5b^3c^7 - 28672a^5b^4c^6 - 4480a^5b^6c^4 + 43520a^5b^7c^3 - 3840a^5b^8c^2 + 51456a^6b^2c^7 + 28672a^6b^4c^5 - 98560a^6b^5c^4 - 8960a^6b^6c^3 + 38400a^6b^7c^2 - 51456a^7b^2c^6 + 124416a^7b^3c^5 + 58880a^7b^4c^4 - 102400a^7b^5c^3 - 6400a^7b^6c^2 - 111168a^8b^2c^5 + 144000a^8b^3c^4 + 44800a^8b^4c^3 - 48000a^8b^5c^2 - 94400a^9b^2c^4 + 83200a^9b^3c^3 + 17920a^9b^4c^2 - 45696a^10b^2c^3 + 26112a^10b^3c^2 - 12672a^11b^2c^2 + 512a^2b^2c^13 - 512a^13b^2c) \\
& - 608a^2b^2c^11 + 2624a^2b^3c^10 + 224a^2b^4c^9 - 6208a^2b^5c^8 + 2112a^2b^6c^7 + 6784a^2b^7c^6 - 3520a^2b^8c^5 - 3584a^2b^9c^4 + 2080a^2b^10c^3 + 832a^2b^11c^2 - 3840a^2b^12c^11 + 992a^2b^11c - 17280a^3b^2c^10 + 992a^3b^10c - 46080a^4b^2c^9 - 3136a^4b^9c - 80640a^5b^2c^8 - 320a^5b^8c - 96768a^6b^2c^7 + 3776a^6b^7c - 80640a^7b^2c^6 - 832a^7b^6c - 46080a^8b^2c^5 - 1952a^8b^5c - 17280a^9b^2c^4 + 736a^9b^4c - 3840a^10b^2c^3 + 352a^10b^3c - 384a^11b^2c^2 - 160a^11b^2c - 4192a^2b^2c^10 + 17888a^2b^3c^9 + 288a^2b^4c^8 - 30080a^2b^5c^7 + 8768a^2b^6c^6 + 22848a^2b^7c^5 - 8768a^2b^8c^4 - 7808a^2b^9c^3 + 2592a^2b^10c^2 - 15648a^3b^2c^9 + 60160a^3b^3c^8 + 1152a^3b^4c^7 - 73472a^3b^5c^6 + 15424a^3b^6c^5 + 37888a^3b^7c^4 - 8960a^3b^8c^3 - 7552a^3b^9c^2 - 36672a^4b^2c^8 + 120512a^4b^3c^7 + 5376a^4b^4c^6 - 104384a^4b^5c^5 + 12800a^4b^6c^4 + 34112a^4b^7c^3 - 3712a^4b^8c^2 - 57792a^5b^2c^7 + 155008a^5b^3c^6 + 12096a^5b^4c^5 - 90496a^5b^5c^4 + 3776a^5b^6c^3 + 16512a^5b^7c^2 - 63168a^6b^2
\end{aligned}$$

$$\begin{aligned}
& 2*c^6 + 131264*a^6*b^3*c^5 + 14784*a^6*b^4*c^4 - 47488*a^6*b^5*c^3 - 1088*a^6*b^6*c^2 - 48192*a^7*b^2*c^5 + 72448*a^7*b^3*c^4 + 10368*a^7*b^4*c^3 - 14080*a^7*b^5*c^2 - 25248*a^8*b^2*c^4 + 24800*a^8*b^3*c^3 + 4032*a^8*b^4*c^2 - 8672*a^9*b^2*c^3 + 4672*a^9*b^3*c^2 - 1760*a^10*b^2*c^2 - 384*a*b*c^12 - 416*a*b^12*c) + \tan(x/2)*(32*a*b^12 - 512*a*c^12 + 128*b*c^12 + 96*b^12*c - 32*b^13 - 64*c^13 + 96*a^2*b^11 - 96*a^3*b^10 - 96*a^4*b^9 + 96*a^5*b^8 + 32*a^6*b^7 - 32*a^7*b^6 - 1728*a^2*c^11 - 3072*a^3*c^10 - 2688*a^4*c^9 + 2688*a^6*c^7 + 3072*a^7*c^6 + 1728*a^8*c^5 + 512*a^9*c^4 + 64*a^10*c^3 + 160*b^2*c^11 - 544*b^3*c^10 + 64*b^4*c^9 + 896*b^5*c^8 - 608*b^6*c^7 - 672*b^7*c^6 + 800*b^8*c^5 + 160*b^9*c^4 - 448*b^10*c^3 + 64*b^11*c^2 + 480*a*b^2*c^10 - 4352*a*b^3*c^9 + 2560*a*b^4*c^8 + 5248*a*b^5*c^7 - 5664*a*b^6*c^6 - 2240*a*b^7*c^5 + 4320*a*b^8*c^4 - 256*a*b^9*c^3 - 1216*a*b^10*c^2 + 5632*a^2*b*c^10 - 672*a^2*b^10*c + 14336*a^3*b*c^9 - 768*a^3*b^9*c + 23296*a^4*b*c^8 + 1248*a^4*b^8*c + 25088*a^5*b*c^7 + 576*a^5*b^7*c + 17920*a^6*b*c^6 - 864*a^6*b^6*c + 8192*a^7*b*c^5 - 128*a^7*b^5*c + 2176*a^8*b*c^4 + 192*a^8*b^4*c + 256*a^9*b*c^3 - 1408*a^2*b^2*c^9 - 14720*a^2*b^3*c^8 + 13440*a^2*b^4*c^7 + 11904*a^2*b^5*c^6 - 16800*a^2*b^6*c^5 - 1696*a^2*b^7*c^4 + 7168*a^2*b^8*c^3 - 1216*a^2*b^9*c^2 - 9856*a^3*b^2*c^8 - 27392*a^3*b^3*c^7 + 31232*a^3*b^4*c^6 + 12928*a^3*b^5*c^5 - 23264*a^3*b^6*c^4 + 1152*a^3*b^7*c^3 + 4800*a^3*b^8*c^2 - 22848*a^4*b^2*c^7 - 30400*a^4*b^3*c^6 + 39680*a^4*b^4*c^5 + 6272*a^4*b^5*c^4 - 16544*a^4*b^6*c^3 + 1824*a^4*b^7*c^2 - 29120*a^5*b^2*c^6 - 20224*a^5*b^3*c^5 + 29184*a^5*b^4*c^4 + 384*a^5*b^5*c^3 - 5856*a^5*b^6*c^2 - 22400*a^6*b^2*c^5 - 7552*a^6*b^3*c^4 + 12160*a^6*b^4*c^3 - 640*a^6*b^5*c^2 - 10368*a^7*b^2*c^4 - 1280*a^7*b^3*c^3 + 2560*a^7*b^4*c^2 - 2656*a^8*b^2*c^3 - 32*a^8*b^3*c^2 - 288*a^9*b^2*c^2 + 1280*a*b*c^11 + 320*a*b^11*c))*((-8*a*c^7 + b^8 + 24*a^2*c^6 + 24*a^3*c^5 + 8*a^4*c^4 + b^5*(-(4*a*c - b^2)^3)^(1/2) - 2*b^2*c^6 + 3*b^4*c^4 - 3*b^6*c^2 - 18*a*b^2*c^5 + 24*a*b^4*c^3 + 3*b*c^4*(-(4*a*c - b^2)^3)^(1/2) - 54*a^2*b^2*c^4 + 33*a^2*b^4*c^2 - 38*a^3*b^2*c^3 - 3*b^3*c^2*(-(4*a*c - b^2)^3)^(1/2) - 10*a*b^6*c + 3*a^2*b*c^2*(-(4*a*c - b^2)^3)^(1/2) + 6*a*b*c^3*(-(4*a*c - b^2)^3)^(1/2) - 4*a*b^3*c*(-(4*a*c - b^2)^3)^(1/2))/(2*(3*a^2*b^8 - b^10 - 3*a^4*b^6 + a^6*b^4 + 16*a^2*c^8 + 96*a^3*c^7 + 240*a^4*c^6 + 320*a^5*c^5 + 240*a^6*c^4 + 96*a^7*c^3 + 16*a^8*c^2 + b^4*c^6 - 3*b^6*c^4 + 3*b^8*c^2 - 8*a*b^2*c^7 + 30*a*b^4*c^5 - 36*a*b^6*c^3 - 36*a^3*b^6*c + 30*a^5*b^4*c - 8*a^7*b^2*c - 96*a^2*b^2*c^6 + 159*a^2*b^4*c^4 - 82*a^2*b^6*c^2 - 312*a^3*b^2*c^5 + 260*a^3*b^4*c^3 - 448*a^4*b^2*c^4 + 159*a^4*b^4*c^2 - 312*a^5*b^2*c^3 - 96*a^6*b^2*c^2 + 14*a*b^8*c)))^(1/2) + (((-8*a*c^7 + b^8 + 24*a^2*c^6 + 24*a^3*c^5 + 8*a^4*c^4 + b^5*(-(4*a*c - b^2)^3)^(1/2) - 2*b^2*c^6 + 3*b^4*c^4 - 3*b^6*c^2 - 18*a*b^2*c^5 + 24*a*b^4*c^3 + 3*b*c^4*(-(4*a*c - b^2)^3)^(1/2) - 54*a^2*b^2*c^4 + 33*a^2*b^4*c^2 - 38*a^3*b^2*c^3 - 3*b^3*c^2*(-(4*a*c - b^2)^3)^(1/2) - 10*a*b^6*c + 3*a^2*b*c^2*(-(4*a*c - b^2)^3)^(1/2) + 6*a*b*c^3*(-(4*a*c - b^2)^3)^(1/2) - 4*a*b^3*c*(-(4*a*c - b^2)^3)^(1/2))/(2*(3*a^2*b^8 - b^10 - 3*a^4*b^6 + a^6*b^4 + 16*a^2*c^8 + 96*a^3*c^7 + 240*a^4*c^6 + 320*a^5*c^5 + 240*a^6*c^4 + 96*a^7*c^3 + 16*a^8*c^2 + b^4*c^6 - 3*b^6*c^4 + 3*b^8*c^2 - 8*a*b^2*c^7 + 30*a*b^4*c^5 - 36*a*b^6*c^3 - 36*a^3*b^6*c + 30*a^5*b^4*c - 8*a^7*b^2*c
\end{aligned}$$

$$\begin{aligned}
& 2*c - 96*a^2*b^2*c^6 + 159*a^2*b^4*c^4 - 82*a^2*b^6*c^2 - 312*a^3*b^2*c^5 + \\
& 260*a^3*b^4*c^3 - 448*a^4*b^2*c^4 + 159*a^4*b^4*c^2 - 312*a^5*b^2*c^3 - 96 \\
& *a^6*b^2*c^2 + 14*a*b^8*c))^{(1/2)}*(128*a*c^{13} - 64*a*b^{13} - 32*b^{13}*c + 32 \\
& *b^{14} - 96*a^2*b^{12} + 256*a^3*b^{11} + 64*a^4*b^{10} - 384*a^5*b^9 + 64*a^6*b^8 \\
& + 256*a^7*b^7 - 96*a^8*b^6 - 64*a^9*b^5 + 32*a^{10}*b^4 + 1408*a^2*c^{12} + 70 \\
& 40*a^3*c^{11} + 21120*a^4*c^{10} + 42240*a^5*c^9 + 59136*a^6*c^8 + 59136*a^7*c^ \\
& 7 + 42240*a^8*c^6 + 21120*a^9*c^5 + 7040*a^{10}*c^4 + 1408*a^{11}*c^3 + 128*a^{1 \\
& 2}*c^2 - 32*b^2*c^{12} + 96*b^3*c^{11} + 64*b^4*c^{10} - 416*b^5*c^9 + 96*b^6*c^8 \\
& + 704*b^7*c^7 - 384*b^8*c^6 - 576*b^9*c^5 + 416*b^{10}*c^4 + 224*b^{11}*c^3 - 1 \\
& 92*b^{12}*c^2 - \tan(x/2)*(-(8*a*c^7 + b^8 + 24*a^2*c^6 + 24*a^3*c^5 + 8*a^4*c \\
& ^4 + b^5*(-(4*a*c - b^2)^3)^{(1/2)} - 2*b^2*c^6 + 3*b^4*c^4 - 3*b^6*c^2 - 18* \\
& a*b^2*c^5 + 24*a*b^4*c^3 + 3*b*c^4*(-(4*a*c - b^2)^3)^{(1/2)} - 54*a^2*b^2*c^ \\
& 4 + 33*a^2*b^4*c^2 - 38*a^3*b^2*c^3 - 3*b^3*c^2*(-(4*a*c - b^2)^3)^{(1/2)} - \\
& 10*a*b^6*c + 3*a^2*b*c^2*(-(4*a*c - b^2)^3)^{(1/2)} + 6*a*b*c^3*(-(4*a*c - b^ \\
& 2)^3)^{(1/2)} - 4*a*b^3*c*(-(4*a*c - b^2)^3)^{(1/2)})/(2*(3*a^2*b^8 - b^{10} - 3* \\
& a^4*b^6 + a^6*b^4 + 16*a^2*c^8 + 96*a^3*c^7 + 240*a^4*c^6 + 320*a^5*c^5 + 2 \\
& 40*a^6*c^4 + 96*a^7*c^3 + 16*a^8*c^2 + b^4*c^6 - 3*b^6*c^4 + 3*b^8*c^2 - 8* \\
& a*b^2*c^7 + 30*a*b^4*c^5 - 36*a*b^6*c^3 - 36*a^3*b^6*c + 30*a^5*b^4*c - 8*a \\
& ^7*b^2*c - 96*a^2*b^2*c^6 + 159*a^2*b^4*c^4 - 82*a^2*b^6*c^2 - 312*a^3*b^2* \\
& c^5 + 260*a^3*b^4*c^3 - 448*a^4*b^2*c^4 + 159*a^4*b^4*c^2 - 312*a^5*b^2*c^3 \\
& - 96*a^6*b^2*c^2 + 14*a*b^8*c))^{(1/2)}*(64*a*b^{14} - 256*a*c^{14} + 256*a^{14}* \\
& c - 64*b^{14}*c - 128*a^2*b^{13} - 256*a^3*b^{12} + 640*a^4*b^{11} + 320*a^5*b^{10} - \\
& 1280*a^6*b^9 + 1280*a^8*b^7 - 320*a^9*b^6 - 640*a^{10}*b^5 + 256*a^{11}*b^4 + \\
& 128*a^{12}*b^3 - 64*a^{13}*b^2 - 2816*a^2*c^{13} - 13824*a^3*c^{12} - 39424*a^4*c^{1 \\
& 1} - 70400*a^5*c^{10} - 76032*a^6*c^9 - 33792*a^7*c^8 + 33792*a^8*c^7 + 76032* \\
& a^9*c^6 + 70400*a^{10}*c^5 + 39424*a^{11}*c^4 + 13824*a^{12}*c^3 + 2816*a^{13}*c^2 \\
& + 64*b^2*c^{13} - 128*b^3*c^{12} - 256*b^4*c^{11} + 640*b^5*c^{10} + 320*b^6*c^9 - \\
& 1280*b^7*c^8 + 1280*b^9*c^6 - 320*b^{10}*c^5 - 640*b^{11}*c^4 + 256*b^{12}*c^3 + \\
& 128*b^{13}*c^2 + 1728*a*b^2*c^{12} - 3840*a*b^3*c^{11} - 3584*a*b^4*c^{10} + 10240* \\
& a*b^5*c^9 + 2240*a*b^6*c^8 - 12800*a*b^7*c^7 + 1280*a*b^8*c^6 + 7680*a*b^9*c \\
& ^5 - 1984*a*b^{10}*c^4 - 1792*a*b^{11}*c^3 + 512*a*b^{12}*c^2 + 5120*a^2*b*c^{12} \\
& - 512*a^2*b^{12}*c + 22528*a^3*b*c^{11} + 1792*a^3*b^{11}*c + 56320*a^4*b*c^{10} + \\
& 1984*a^4*b^{10}*c + 84480*a^5*b*c^9 - 7680*a^5*b^9*c + 67584*a^6*b*c^8 - 1280 \\
& *a^6*b^8*c + 12800*a^7*b^7*c - 67584*a^8*b*c^6 - 2240*a^8*b^6*c - 84480*a^9 \\
& *b*c^5 - 10240*a^9*b^5*c - 56320*a^{10}*b*c^4 + 3584*a^{10}*b^4*c - 22528*a^{11}* \\
& b*c^3 + 3840*a^{11}*b^3*c - 5120*a^{12}*b*c^2 - 1728*a^{12}*b^2*c + 12672*a^2*b^2 \\
& *c^{11} - 26112*a^2*b^3*c^{10} - 17920*a^2*b^4*c^9 + 48000*a^2*b^5*c^8 + 6400*a \\
& ^2*b^6*c^7 - 38400*a^2*b^7*c^6 + 3840*a^2*b^8*c^5 + 11520*a^2*b^9*c^4 - 166 \\
& 4*a^2*b^{10}*c^3 + 45696*a^3*b^2*c^{10} - 83200*a^3*b^3*c^9 - 44800*a^3*b^4*c^8 \\
& + 102400*a^3*b^5*c^7 + 8960*a^3*b^6*c^6 - 43520*a^3*b^7*c^5 + 2560*a^3*b^8 \\
& *c^4 + 1664*a^3*b^{10}*c^2 + 94400*a^4*b^2*c^9 - 144000*a^4*b^3*c^8 - 58880*a \\
& ^4*b^4*c^7 + 98560*a^4*b^5*c^6 + 4480*a^4*b^6*c^5 - 2560*a^4*b^8*c^3 - 1152 \\
& 0*a^4*b^9*c^2 + 111168*a^5*b^2*c^8 - 124416*a^5*b^3*c^7 - 28672*a^5*b^4*c^6 \\
& - 4480*a^5*b^6*c^4 + 43520*a^5*b^7*c^3 - 3840*a^5*b^8*c^2 + 51456*a^6*b^2* \\
& c^7 + 28672*a^6*b^4*c^5 - 98560*a^6*b^5*c^4 - 8960*a^6*b^6*c^3 + 38400*a^6*
\end{aligned}$$



$$\begin{aligned}
& b^7c^2 - 51456a^7b^2c^6 + 124416a^7b^3c^5 + 58880a^7b^4c^4 - 102400a^7b^5c^3 - 6400a^7b^6c^2 - 111168a^8b^2c^5 + 144000a^8b^3c^4 \\
& + 44800a^8b^4c^3 - 48000a^8b^5c^2 - 94400a^9b^2c^4 + 83200a^9b^3c^3 + 17920a^9b^4c^2 - 45696a^{10}b^2c^3 + 26112a^{10}b^3c^2 - 12672 \\
& *a^{11}b^2c^2 + 512a*b*c^{13} - 512a^{13}b*c) - 608a*b^2c^{11} + 2624a*b^3c^{10} + 224a*b^4c^9 - 6208a*b^5c^8 + 2112a*b^6c^7 + 6784a*b^7c^6 - 3 \\
& 520a*b^8c^5 - 3584a*b^9c^4 + 2080a*b^{10}c^3 + 832a*b^{11}c^2 - 3840a^2b*c^{11} + 992a^2b^{11}c - 17280a^3b*c^{10} + 992a^3b^{10}c - 46080a^4b \\
& *c^9 - 3136a^4b^9c - 80640a^5b*c^8 - 320a^5b^8c - 96768a^6b*c^7 + 3776a^6b^7c - 80640a^7b*c^6 - 832a^7b^6c - 46080a^8b*c^5 - 1952 \\
& a^8b^5c - 17280a^9b*c^4 + 736a^9b^4c - 3840a^{10}b*c^3 + 352a^{10}b^3c - 384a^{11}b*c^2 - 160a^{11}b^2c - 4192a^2b^2c^{10} + 17888a^2b^3c^9 \\
& + 288a^2b^4c^8 - 30080a^2b^5c^7 + 8768a^2b^6c^6 + 22848a^2b^7c^5 - 8768a^2b^8c^4 - 7808a^2b^9c^3 + 2592a^2b^{10}c^2 - 15648a^3b^2c^9 \\
& + 60160a^3b^3c^8 + 1152a^3b^4c^7 - 73472a^3b^5c^6 + 15424a^3b^6c^5 + 37888a^3b^7c^4 - 8960a^3b^8c^3 - 7552a^3b^9c^2 - 366 \\
& 72a^4b^2c^8 + 120512a^4b^3c^7 + 5376a^4b^4c^6 - 104384a^4b^5c^5 + 12800a^4b^6c^4 + 34112a^4b^7c^3 - 3712a^4b^8c^2 - 57792a^5b^2 \\
& *c^7 + 155008a^5b^3c^6 + 12096a^5b^4c^5 - 90496a^5b^5c^4 + 3776a^5b^6c^3 + 16512a^5b^7c^2 - 63168a^6b^2c^6 + 131264a^6b^3c^5 + 14 \\
& 784a^6b^4c^4 - 47488a^6b^5c^3 - 1088a^6b^6c^2 - 48192a^7b^2c^5 + 72448a^7b^3c^4 + 10368a^7b^4c^3 - 14080a^7b^5c^2 - 25248a^8b^2 \\
& *c^4 + 24800a^8b^3c^3 + 4032a^8b^4c^2 - 8672a^9b^2c^3 + 4672a^9b^3c^2 - 1760a^{10}b^2c^2 - 384a*b*c^{12} - 416a*b^{12}c) - \tan(x/2)*(32a* \\
& b^{12} - 512a*c^{12} + 128*b*c^{12} + 96*b^{12}c - 32*b^{13} - 64*c^{13} + 96a^2b^{11} \\
& 1 - 96a^3b^{10} - 96a^4b^9 + 96a^5b^8 + 32a^6b^7 - 32a^7b^6 - 1728 \\
& a^2c^{11} - 3072a^3c^{10} - 2688a^4c^9 + 2688a^6c^7 + 3072a^7c^6 + 172 \\
& 8a^8c^5 + 512a^9c^4 + 64a^{10}c^3 + 160b^2c^{11} - 544b^3c^{10} + 64b^4c^9 + 896b^5c^8 - 608b^6c^7 - 672b^7c^6 + 800b^8c^5 + 160b^9c^4 \\
& - 448b^{10}c^3 + 64b^{11}c^2 + 480a*b^2c^{10} - 4352a*b^3c^9 + 2560a*b^4c^8 + 5248a*b^5c^7 - 5664a*b^6c^6 - 2240a*b^7c^5 + 4320a*b^8c^4 - \\
& 256a*b^9c^3 - 1216a*b^{10}c^2 + 5632a^2b*c^{10} - 672a^2b^{10}c + 14336 \\
& a^3b*c^9 - 768a^3b^9c + 23296a^4b*c^8 + 1248a^4b^8c + 25088a^5b \\
& *c^7 + 576a^5b^7c + 17920a^6b*c^6 - 864a^6b^6c + 8192a^7b*c^5 - 1 \\
& 28a^7b^5c + 2176a^8b*c^4 + 192a^8b^4c + 256a^9b*c^3 - 1408a^2b^2c^9 - 14720a^2b^3c^8 + 13440a^2b^4c^7 + 11904a^2b^5c^6 - 16800a \\
& ^2b^6c^5 - 1696a^2b^7c^4 + 7168a^2b^8c^3 - 1216a^2b^9c^2 - 9856 \\
& a^3b^2c^8 - 27392a^3b^3c^7 + 31232a^3b^4c^6 + 12928a^3b^5c^5 - 2 \\
& 3264a^3b^6c^4 + 1152a^3b^7c^3 + 4800a^3b^8c^2 - 22848a^4b^2c^7 - 30400a^4b^3c^6 + 39680a^4b^4c^5 + 6272a^4b^5c^4 - 16544a^4b^6c^3 \\
& + 1824a^4b^7c^2 - 29120a^5b^2c^6 - 20224a^5b^3c^5 + 29184a^5b^4c^4 + 384a^5b^5c^3 - 5856a^5b^6c^2 - 22400a^6b^2c^5 - 7552a^6 \\
& *b^3c^4 + 12160a^6b^4c^3 - 640a^6b^5c^2 - 10368a^7b^2c^4 - 1280a^7b^3c^3 + 2560a^7b^4c^2 - 2656a^8b^2c^3 - 32a^8b^3c^2 - 288a^9 \\
& *b^2c^2 + 1280a*b*c^{11} + 320a*b^{11}c))*(-(8a*c^7 + b^8 + 24a^2c^6 + 2
\end{aligned}$$

$$\begin{aligned}
& 4a^3c^5 + 8a^4c^4 + b^5(-4ac - b^2)^3)^{1/2} - 2b^2c^6 + 3b^4c^4 \\
& - 3b^6c^2 - 18ab^2c^5 + 24ab^4c^3 + 3b^3c^4(-4ac - b^2)^3)^{1/2} - 54a^2b^2c^4 \\
& + 33a^2b^4c^2 - 38a^3b^2c^3 - 3b^3c^2(-4ac - b^2)^3)^{1/2} - 10ab^6c \\
& + 3a^2b^3c^2(-4ac - b^2)^3)^{1/2} + 6ab^3c^3(-4ac - b^2)^3)^{1/2} - 4ab^3c^3(-4ac - b^2)^3)^{1/2} \\
& / (2(3a^2b^8 - b^{10} - 3a^4b^6 + a^6b^4 + 16a^2c^8 + 96a^3c^7 + 240a^4c^6 \\
& + 320a^5c^5 + 240a^6c^4 + 96a^7c^3 + 16a^8c^2 + b^4c^6 - 3b^6c^4 \\
& + 3b^8c^2 - 8ab^2c^7 + 30ab^4c^5 - 36ab^6c^3 - 36a^3b^6c + 30a^5b^4c \\
& - 8a^7b^2c - 96a^2b^2c^6 + 159a^2b^4c^4 - 82a^2b^6c^2 - 312a^3b^2c^5 \\
& + 260a^3b^4c^3 - 448a^4b^2c^4 + 159a^4b^4c^2 - 312a^5b^2c^3 - 96a^6b^2c^2 \\
& + 14ab^8c))^{1/2} + 1792a^2c^{10} + 3584a^3c^9 + 4480a^4c^8 + 3584a^5c^7 \\
& + 1792a^6c^6 + 512a^7c^5 + 64a^8c^4 - 320b^2c^{10} + 64b^3c^9 + 576b^4c^8 \\
& - 192b^5c^7 - 448b^6c^6 + 192b^7c^5 + 128b^8c^4 - 64b^9c^3 - 1984ab^2c^9 \\
& + 384ab^3c^8 + 2496ab^4c^7 - 768ab^5c^6 - 1088ab^6c^5 + 384ab^7c^4 + 6 \\
& 4ab^8c^3 - 5184a^2b^2c^8 + 960a^2b^3c^7 + 4224a^2b^4c^6 - 1152a^2b^5c^5 \\
& - 832a^2b^6c^4 + 192a^2b^7c^3 - 7360a^3b^2c^7 + 1280a^3b^3c^6 \\
& + 3456a^3b^4c^5 - 768a^3b^5c^4 - 192a^3b^6c^3 - 6080a^4b^2c^6 \\
& + 960a^4b^3c^5 + 1344a^4b^4c^4 - 192a^4b^5c^3 - 2880a^5b^2c^5 \\
& + 384a^5b^3c^4 + 192a^5b^4c^3 - 704a^6b^2c^4 + 64a^6b^3c^3 - 64a^7b^2c^3) \\
& * (-8a^7c^7 + b^8 + 24a^2c^6 + 24a^3c^5 + 8a^4c^4 + b^5(-4ac - b^2)^3)^{1/2} \\
& - 2b^2c^6 + 3b^4c^4 - 3b^6c^2 - 18ab^2c^5 + 24ab^4c^3 + 3b^3c^4(-4ac - b^2)^3)^{1/2} \\
& - 54a^2b^2c^4 + 33a^2b^4c^2 - 38a^3b^2c^3 - 3b^3c^2(-4ac - b^2)^3)^{1/2} - 10ab^6c \\
& + 3a^2b^3c^2(-4ac - b^2)^3)^{1/2} + 6ab^3c^3(-4ac - b^2)^3)^{1/2} - 4ab^3c^3(-4ac - b^2)^3)^{1/2} \\
& / (2(3a^2b^8 - b^{10} - 3a^4b^6 + a^6b^4 + 16a^2c^8 + 96a^3c^7 + 240a^4c^6 \\
& + 320a^5c^5 + 240a^6c^4 + 96a^7c^3 + 16a^8c^2 + b^4c^6 - 3b^6c^4 \\
& + 3b^8c^2 - 8ab^2c^7 + 30ab^4c^5 - 36ab^6c^3 - 36a^3b^6c + 30a^5b^4c \\
& - 8a^7b^2c - 96a^2b^2c^6 + 159a^2b^4c^4 - 82a^2b^6c^2 - 312a^3b^2c^5 \\
& + 260a^3b^4c^3 - 448a^4b^2c^4 + 159a^4b^4c^2 - 312a^5b^2c^3 - 96a^6b^2c^2 \\
& + 14ab^8c))^{1/2} * 2i + \operatorname{atan}(\frac{(-8a^7c^7 + b^8 + 24a^2c^6 + 24a^3c^5 + 8a^4c^4 - b^5(-4ac - b^2)^3)^{1/2} - 2b^2c^6 + 3b^4c^4 - 3b^6c^2 - 18ab^2c^5 + 24ab^4c^3 - 3b^3c^4(-4ac - b^2)^3)^{1/2} - 54a^2b^2c^4 + 33a^2b^4c^2 - 38a^3b^2c^3 + 3b^3c^2(-4ac - b^2)^3)^{1/2} - 10ab^6c - 3a^2b^3c^2(-4ac - b^2)^3)^{1/2} - 6ab^3c^3(-4ac - b^2)^3)^{1/2} + 4ab^3c^3(-4ac - b^2)^3)^{1/2}}{2(3a^2b^8 - b^{10} - 3a^4b^6 + a^6b^4 + 16a^2c^8 + 96a^3c^7 + 240a^4c^6 + 320a^5c^5 + 240a^6c^4 + 96a^7c^3 + 16a^8c^2 + b^4c^6 - 3b^6c^4 + 3b^8c^2 - 8ab^2c^7 + 30ab^4c^5 - 36ab^6c^3 - 36a^3b^6c + 30a^5b^4c - 8a^7b^2c - 96a^2b^2c^6 + 159a^2b^4c^4 - 82a^2b^6c^2 - 312a^3b^2c^5 + 260a^3b^4c^3 - 448a^4b^2c^4 + 159a^4b^4c^2 - 312a^5b^2c^3 - 96a^6b^2c^2 + 14ab^8c))^{1/2}} * (128a^8c^{13} - 64ab^{13} - 32b^{13}c + 32b^{14} - 96a^2b^{12} + 256a^3b^{11} + 64a^4b^{10} - 384a^5b^9 + 64a^6b^8 + 256a^7b^7 - 96a^8b^6 - 64a^9b^5
\end{aligned}$$

$$\begin{aligned}
& + 32a^{10}b^4 + 1408a^2c^{12} + 7040a^3c^{11} + 21120a^4c^{10} + 42240a^5c^9 + 59136a^6c^8 + 59136a^7c^7 + 42240a^8c^6 + 21120a^9c^5 + 7040a^{10}c^4 + 1408a^{11}c^3 + 128a^{12}c^2 - 32b^2c^{12} + 96b^3c^{11} + 64b^4c^{10} - 416b^5c^9 + 96b^6c^8 + 704b^7c^7 - 384b^8c^6 - 576b^9c^5 + 416b^{10}c^4 + 224b^{11}c^3 - 192b^{12}c^2 + \tan(x/2) * (- (8a^7c^7 + b^8 + 24a^2c^6 + 24a^3c^5 + 8a^4c^4 - b^5 * (- (4ac - b^2)^3)^{1/2} - 2b^2c^6 + 3b^4c^4 - 3b^6c^2 - 18a^2b^2c^5 + 24a^2b^4c^3 - 3b^3c^4 * (- (4ac - b^2)^3)^{1/2} - 54a^2b^2c^4 + 33a^2b^4c^2 - 38a^3b^2c^3 + 3b^3c^2 * (- (4ac - b^2)^3)^{1/2} - 10a^2b^6c - 3a^2b^3c^2 * (- (4ac - b^2)^3)^{1/2} - 6a^2b^3c^3 * (- (4ac - b^2)^3)^{1/2} + 4a^2b^3c^4 * (- (4ac - b^2)^3)^{1/2}) / (2 * (3a^2b^8 - b^{10} - 3a^4b^6 + a^6b^4 + 16a^2c^8 + 96a^3c^7 + 240a^4c^6 + 320a^5c^5 + 240a^6c^4 + 96a^7c^3 + 16a^8c^2 + b^4c^6 - 3b^6c^4 + 3b^8c^2 - 8a^2b^2c^7 + 30a^2b^4c^5 - 36a^2b^6c^3 - 36a^3b^6c + 30a^5b^4c - 8a^7b^2c - 96a^2b^2c^6 + 159a^2b^4c^4 - 82a^2b^6c^2 - 312a^3b^2c^5 + 260a^3b^4c^3 - 448a^4b^2c^4 + 159a^4b^4c^2 - 312a^5b^2c^3 - 96a^6b^2c^2 + 14a^2b^8c))^{1/2} * (64a^2b^{14} - 256a^2c^{14} + 256a^{14}c - 64b^{14}c - 128a^2b^{13} - 256a^3b^{12} + 640a^4b^{11} + 320a^5b^{10} - 1280a^6b^9 + 1280a^8b^7 - 320a^9b^6 - 640a^{10}b^5 + 256a^{11}b^4 + 128a^{12}b^3 - 64a^{13}b^2 - 2816a^2c^{13} - 13824a^3c^{12} - 39424a^4c^{11} - 70400a^5c^{10} - 76032a^6c^9 - 33792a^7c^8 + 33792a^8c^7 + 76032a^9c^6 + 70400a^{10}c^5 + 39424a^{11}c^4 + 13824a^{12}c^3 + 2816a^{13}c^2 + 64b^2c^{13} - 128b^3c^{12} - 256b^4c^{11} + 640b^5c^{10} + 320b^6c^9 - 1280b^7c^8 + 1280b^9c^6 - 320b^{10}c^5 - 640b^{11}c^4 + 256b^{12}c^3 + 128b^{13}c^2 + 1728a^2b^2c^{12} - 3840a^2b^3c^{11} - 3584a^2b^4c^{10} + 10240a^2b^5c^9 + 2240a^2b^6c^8 - 12800a^2b^7c^7 + 1280a^2b^8c^6 + 7680a^2b^9c^5 - 1984a^2b^{10}c^4 - 1792a^2b^{11}c^3 + 512a^2b^{12}c^2 + 5120a^2b^2c^{12} - 512a^2b^2c^{12} + 22528a^3b^2c^{11} + 1792a^3b^2c^{11} + 56320a^4b^2c^{10} + 1984a^4b^2c^{10} + 84480a^5b^2c^9 - 7680a^5b^2c^9 + 67584a^6b^2c^8 - 1280a^6b^2c^8 + 12800a^7b^2c^7 - 67584a^8b^2c^6 - 2240a^8b^2c^6 - 84480a^9b^2c^5 - 10240a^9b^2c^5 - 56320a^{10}b^2c^4 + 3584a^{10}b^2c^4 - 22528a^{11}b^2c^3 + 3840a^{11}b^2c^3 - 5120a^{12}b^2c^2 - 1728a^{12}b^2c^2 + 12672a^2b^2c^{11} - 26112a^2b^3c^{10} - 17920a^2b^4c^9 + 48000a^2b^5c^8 + 6400a^2b^6c^7 - 38400a^2b^7c^6 + 3840a^2b^8c^5 + 11520a^2b^9c^4 - 1664a^2b^{10}c^3 + 45696a^3b^2c^{10} - 83200a^3b^3c^9 - 44800a^3b^4c^8 + 102400a^3b^5c^7 + 8960a^3b^6c^6 - 43520a^3b^7c^5 + 2560a^3b^8c^4 + 1664a^3b^{10}c^2 + 94400a^4b^2c^9 - 144000a^4b^3c^8 - 58880a^4b^4c^7 + 98560a^4b^5c^6 + 4480a^4b^6c^5 - 2560a^4b^8c^3 - 11520a^4b^9c^2 + 111168a^5b^2c^8 - 124416a^5b^3c^7 - 28672a^5b^4c^6 - 4480a^5b^6c^4 + 43520a^5b^7c^3 - 3840a^5b^8c^2 + 51456a^6b^2c^7 + 28672a^6b^4c^5 - 98560a^6b^5c^4 - 8960a^6b^6c^3 + 38400a^6b^7c^2 - 51456a^7b^2c^6 + 124416a^7b^3c^5 + 58880a^7b^4c^4 - 102400a^7b^5c^3 - 6400a^7b^6c^2 - 111168a^8b^2c^5 + 144000a^8b^3c^4 + 44800a^8b^4c^3 - 48000a^8b^5c^2 - 94400a^9b^2c^4 + 83200a^9b^3c^3 + 17920a^9b^4c^2 - 45696a^{10}b^2c^3 + 26112a^{10}b^3c^2 - 12672a^{11}b^2c^2 + 512a^2b^2c^{13} - 512a^{13}c^2
\end{aligned}$$

$$\begin{aligned}
& b^*c) - 608*a*b^2*c^{11} + 2624*a*b^3*c^{10} + 224*a*b^4*c^9 - 6208*a*b^5*c^8 + \\
& 2112*a*b^6*c^7 + 6784*a*b^7*c^6 - 3520*a*b^8*c^5 - 3584*a*b^9*c^4 + 2080*a* \\
& b^{10}*c^3 + 832*a*b^{11}*c^2 - 3840*a^2*b*c^{11} + 992*a^2*b^{11}*c - 17280*a^3*b* \\
& c^{10} + 992*a^3*b^{10}*c - 46080*a^4*b*c^9 - 3136*a^4*b^9*c - 80640*a^5*b*c^8 \\
& - 320*a^5*b^8*c - 96768*a^6*b*c^7 + 3776*a^6*b^7*c - 80640*a^7*b*c^6 - 832* \\
& a^7*b^6*c - 46080*a^8*b*c^5 - 1952*a^8*b^5*c - 17280*a^9*b*c^4 + 736*a^9*b^4* \\
& c - 3840*a^{10}*b*c^3 + 352*a^{10}*b^3*c - 384*a^{11}*b*c^2 - 160*a^{11}*b^2*c - \\
& 4192*a^2*b^2*c^{10} + 17888*a^2*b^3*c^9 + 288*a^2*b^4*c^8 - 30080*a^2*b^5*c^7 \\
& + 8768*a^2*b^6*c^6 + 22848*a^2*b^7*c^5 - 8768*a^2*b^8*c^4 - 7808*a^2*b^9*c \\
& ^3 + 2592*a^2*b^{10}*c^2 - 15648*a^3*b^2*c^9 + 60160*a^3*b^3*c^8 + 1152*a^3*b \\
& ^4*c^7 - 73472*a^3*b^5*c^6 + 15424*a^3*b^6*c^5 + 37888*a^3*b^7*c^4 - 8960*a \\
& ^3*b^8*c^3 - 7552*a^3*b^9*c^2 - 36672*a^4*b^2*c^8 + 120512*a^4*b^3*c^7 + 53 \\
& 76*a^4*b^4*c^6 - 104384*a^4*b^5*c^5 + 12800*a^4*b^6*c^4 + 34112*a^4*b^7*c^3 \\
& - 3712*a^4*b^8*c^2 - 57792*a^5*b^2*c^7 + 155008*a^5*b^3*c^6 + 12096*a^5*b^4* \\
& c^5 - 90496*a^5*b^5*c^4 + 3776*a^5*b^6*c^3 + 16512*a^5*b^7*c^2 - 63168*a^6* \\
& b^2*c^6 + 131264*a^6*b^3*c^5 + 14784*a^6*b^4*c^4 - 47488*a^6*b^5*c^3 - 10 \\
& 88*a^6*b^6*c^2 - 48192*a^7*b^2*c^5 + 72448*a^7*b^3*c^4 + 10368*a^7*b^4*c^3 \\
& - 14080*a^7*b^5*c^2 - 25248*a^8*b^2*c^4 + 24800*a^8*b^3*c^3 + 4032*a^8*b^4* \\
& c^2 - 8672*a^9*b^2*c^3 + 4672*a^9*b^3*c^2 - 1760*a^{10}*b^2*c^2 - 384*a*b*c^{11} \\
& - 416*a*b^{12}*c) + \tan(x/2)*(32*a*b^{12} - 512*a*c^{12} + 128*b*c^{12} + 96*b^{12} \\
& *c - 32*b^{13} - 64*c^{13} + 96*a^2*b^{11} - 96*a^3*b^{10} - 96*a^4*b^9 + 96*a^5*b^8 \\
& + 32*a^6*b^7 - 32*a^7*b^6 - 1728*a^2*c^{11} - 3072*a^3*c^{10} - 2688*a^4*c^9 \\
& + 2688*a^6*c^7 + 3072*a^7*c^6 + 1728*a^8*c^5 + 512*a^9*c^4 + 64*a^{10}*c^3 + \\
& 160*b^2*c^{11} - 544*b^3*c^{10} + 64*b^4*c^9 + 896*b^5*c^8 - 608*b^6*c^7 - 672* \\
& b^7*c^6 + 800*b^8*c^5 + 160*b^9*c^4 - 448*b^{10}*c^3 + 64*b^{11}*c^2 + 480*a*b^2* \\
& c^{10} - 4352*a*b^3*c^9 + 2560*a*b^4*c^8 + 5248*a*b^5*c^7 - 5664*a*b^6*c^6 - \\
& 2240*a*b^7*c^5 + 4320*a*b^8*c^4 - 256*a*b^9*c^3 - 1216*a*b^{10}*c^2 + 5632* \\
& a^2*b*c^{10} - 672*a^2*b^{10}*c + 14336*a^3*b*c^9 - 768*a^3*b^9*c + 23296*a^4*b* \\
& *c^8 + 1248*a^4*b^8*c + 25088*a^5*b*c^7 + 576*a^5*b^7*c + 17920*a^6*b*c^6 - \\
& 864*a^6*b^6*c + 8192*a^7*b*c^5 - 128*a^7*b^5*c + 2176*a^8*b*c^4 + 192*a^8* \\
& b^4*c + 256*a^9*b*c^3 - 1408*a^2*b^2*c^9 - 14720*a^2*b^3*c^8 + 13440*a^2*b^4* \\
& c^7 + 11904*a^2*b^5*c^6 - 16800*a^2*b^6*c^5 - 1696*a^2*b^7*c^4 + 7168*a^2* \\
& *b^8*c^3 - 1216*a^2*b^9*c^2 - 9856*a^3*b^2*c^8 - 27392*a^3*b^3*c^7 + 31232* \\
& a^3*b^4*c^6 + 12928*a^3*b^5*c^5 - 23264*a^3*b^6*c^4 + 1152*a^3*b^7*c^3 + 48 \\
& 00*a^3*b^8*c^2 - 22848*a^4*b^2*c^7 - 30400*a^4*b^3*c^6 + 39680*a^4*b^4*c^5 \\
& + 6272*a^4*b^5*c^4 - 16544*a^4*b^6*c^3 + 1824*a^4*b^7*c^2 - 29120*a^5*b^2*c \\
& ^6 - 20224*a^5*b^3*c^5 + 29184*a^5*b^4*c^4 + 384*a^5*b^5*c^3 - 5856*a^5*b^6* \\
& *c^2 - 22400*a^6*b^2*c^5 - 7552*a^6*b^3*c^4 + 12160*a^6*b^4*c^3 - 640*a^6*b^5* \\
& c^2 - 10368*a^7*b^2*c^4 - 1280*a^7*b^3*c^3 + 2560*a^7*b^4*c^2 - 2656*a^8* \\
& *b^2*c^3 - 32*a^8*b^3*c^2 - 288*a^9*b^2*c^2 + 1280*a*b*c^{11} + 320*a*b^{11}*c) \\
& )*(-(8*a*c^7 + b^8 + 24*a^2*c^6 + 24*a^3*c^5 + 8*a^4*c^4 - b^5*(-(4*a*c - b \\
& ^2)^3))^{(1/2)} - 2*b^2*c^6 + 3*b^4*c^4 - 3*b^6*c^2 - 18*a*b^2*c^5 + 24*a*b^4* \\
& c^3 - 3*b*c^4*(-(4*a*c - b^2)^3)^{(1/2)} - 54*a^2*b^2*c^4 + 33*a^2*b^4*c^2 - \\
& 38*a^3*b^2*c^3 + 3*b^3*c^2*(-(4*a*c - b^2)^3)^{(1/2)} - 10*a*b^6*c - 3*a^2*b* \\
& c^2*(-(4*a*c - b^2)^3)^{(1/2)} - 6*a*b*c^3*(-(4*a*c - b^2)^3)^{(1/2)} + 4*a*b^3
\end{aligned}$$

$$\begin{aligned}
& *c * (- (4*a*c - b^2)^3)^{(1/2)} / (2*(3*a^2*b^8 - b^{10} - 3*a^4*b^6 + a^6*b^4 + 16*a^2*c^8 + 96*a^3*c^7 + 240*a^4*c^6 + 320*a^5*c^5 + 240*a^6*c^4 + 96*a^7*c^3 + 16*a^8*c^2 + b^4*c^6 - 3*b^6*c^4 + 3*b^8*c^2 - 8*a*b^2*c^7 + 30*a*b^4*c^5 - 36*a*b^6*c^3 - 36*a^3*b^6*c + 30*a^5*b^4*c - 8*a^7*b^2*c - 96*a^2*b^2*c^6 + 159*a^2*b^4*c^4 - 82*a^2*b^6*c^2 - 312*a^3*b^2*c^5 + 260*a^3*b^4*c^3 - 448*a^4*b^2*c^4 + 159*a^4*b^4*c^2 - 312*a^5*b^2*c^3 - 96*a^6*b^2*c^2 + 14*a*b^8*c))^{(1/2)} * i - ((- (8*a*c^7 + b^8 + 24*a^2*c^6 + 24*a^3*c^5 + 8*a^4*c^4 - b^5 * (- (4*a*c - b^2)^3)^{(1/2)} - 2*b^2*c^6 + 3*b^4*c^4 - 3*b^6*c^2 - 18*a*b^2*c^5 + 24*a*b^4*c^3 - 3*b*c^4 * (- (4*a*c - b^2)^3)^{(1/2)} - 54*a^2*b^2*c^4 + 33*a^2*b^4*c^2 - 38*a^3*b^2*c^3 + 3*b^3*c^2 * (- (4*a*c - b^2)^3)^{(1/2)} - 10*a*b^6*c - 3*a^2*b*c^2 * (- (4*a*c - b^2)^3)^{(1/2)} - 6*a*b*c^3 * (- (4*a*c - b^2)^3)^{(1/2)} + 4*a*b^3*c * (- (4*a*c - b^2)^3)^{(1/2)}) / (2*(3*a^2*b^8 - b^{10} - 3*a^4*b^6 + a^6*b^4 + 16*a^2*c^8 + 96*a^3*c^7 + 240*a^4*c^6 + 320*a^5*c^5 + 240*a^6*c^4 + 96*a^7*c^3 + 16*a^8*c^2 + b^4*c^6 - 3*b^6*c^4 + 3*b^8*c^2 - 8*a*b^2*c^7 + 30*a*b^4*c^5 - 36*a*b^6*c^3 - 36*a^3*b^6*c + 30*a^5*b^4*c - 8*a^7*b^2*c - 96*a^2*b^2*c^6 + 159*a^2*b^4*c^4 - 82*a^2*b^6*c^2 - 312*a^3*b^2*c^5 + 260*a^3*b^4*c^3 - 448*a^4*b^2*c^4 + 159*a^4*b^4*c^2 - 312*a^5*b^2*c^3 - 96*a^6*b^2*c^2 + 14*a*b^8*c))^{(1/2)} * (128*a*c^{13} - 64*a*b^{13} - 32*b^{13}*c + 32*b^{14} - 96*a^2*b^{12} + 256*a^3*b^{11} + 64*a^4*b^{10} - 384*a^5*b^9 + 64*a^6*b^8 + 256*a^7*b^7 - 96*a^8*b^6 - 64*a^9*b^5 + 32*a^{10}*b^4 + 1408*a^2*c^{12} + 7040*a^3*c^{11} + 21120*a^4*c^{10} + 42240*a^5*c^9 + 59136*a^6*c^8 + 59136*a^7*c^7 + 42240*a^8*c^6 + 21120*a^9*c^5 + 7040*a^{10}*c^4 + 1408*a^{11}*c^3 + 128*a^{12}*c^2 - 32*b^2*c^{12} + 96*b^3*c^{11} + 64*b^4*c^{10} - 416*b^5*c^9 + 96*b^6*c^8 + 704*b^7*c^7 - 384*b^8*c^6 - 576*b^9*c^5 + 416*b^{10}*c^4 + 224*b^{11}*c^3 - 192*b^{12}*c^2 - \tan(x/2) * (- (8*a*c^7 + b^8 + 24*a^2*c^6 + 24*a^3*c^5 + 8*a^4*c^4 - b^5 * (- (4*a*c - b^2)^3)^{(1/2)} - 2*b^2*c^6 + 3*b^4*c^4 - 3*b^6*c^2 - 18*a*b^2*c^5 + 24*a*b^4*c^3 - 3*b*c^4 * (- (4*a*c - b^2)^3)^{(1/2)} - 54*a^2*b^2*c^4 + 33*a^2*b^4*c^2 - 38*a^3*b^2*c^3 + 3*b^3*c^2 * (- (4*a*c - b^2)^3)^{(1/2)} - 10*a*b^6*c - 3*a^2*b*c^2 * (- (4*a*c - b^2)^3)^{(1/2)} - 6*a*b*c^3 * (- (4*a*c - b^2)^3)^{(1/2)} + 4*a*b^3*c * (- (4*a*c - b^2)^3)^{(1/2)}) / (2*(3*a^2*b^8 - b^{10} - 3*a^4*b^6 + a^6*b^4 + 16*a^2*c^8 + 96*a^3*c^7 + 240*a^4*c^6 + 320*a^5*c^5 + 240*a^6*c^4 + 96*a^7*c^3 + 16*a^8*c^2 + b^4*c^6 - 3*b^6*c^4 + 3*b^8*c^2 - 8*a*b^2*c^7 + 30*a*b^4*c^5 - 36*a*b^6*c^3 - 36*a^3*b^6*c + 30*a^5*b^4*c - 8*a^7*b^2*c - 96*a^2*b^2*c^6 + 159*a^2*b^4*c^4 - 82*a^2*b^6*c^2 - 312*a^3*b^2*c^5 + 260*a^3*b^4*c^3 - 448*a^4*b^2*c^4 + 159*a^4*b^4*c^2 - 312*a^5*b^2*c^3 - 96*a^6*b^2*c^2 + 14*a*b^8*c))^{(1/2)} * (64*a*b^{14} - 256*a*c^{14} + 256*a^{14}*c - 64*b^{14}*c - 128*a^2*b^{13} - 256*a^3*b^{12} + 640*a^4*b^{11} + 320*a^5*b^{10} - 1280*a^6*b^9 + 1280*a^8*b^7 - 320*a^9*b^6 - 640*a^{10}*b^5 + 256*a^{11}*b^4 + 128*a^{12}*b^3 - 64*a^{13}*b^2 - 2816*a^2*c^{13} - 13824*a^3*c^{12} - 39424*a^4*c^{11} - 70400*a^5*c^{10} - 76032*a^6*c^9 - 33792*a^7*c^8 + 33792*a^8*c^7 + 76032*a^9*c^6 + 70400*a^{10}*c^5 + 39424*a^{11}*c^4 + 13824*a^{12}*c^3 + 2816*a^{13}*c^2 + 64*b^2*c^{13} - 128*b^3*c^{12} - 256*b^4*c^{11} + 640*b^5*c^{10} + 320*b^6*c^9 - 1280*b^7*c^8 + 1280*b^9*c^6 - 320*b^{10}*c^5 - 640*b^{11}*c^4 + 256*b^{12}*c^3 + 128*b^{13}*c^2 + 1728*a*b^2*c^{12} - 3840*a*b^3*c^{11} - 3584*a*b^4*c^{10} + 10240*a*b^5*c^9 + 2240*a*b^6*c^8 - 12800*a*b^7*c^7 + 1280*a*b^8*c^6 + 7680
\end{aligned}$$

$$\begin{aligned}
& *a*b^9*c^5 - 1984*a*b^{10}*c^4 - 1792*a*b^{11}*c^3 + 512*a*b^{12}*c^2 + 5120*a^2* \\
& b*c^{12} - 512*a^2*b^{12}*c + 22528*a^3*b*c^{11} + 1792*a^3*b^{11}*c + 56320*a^4*b* \\
& c^{10} + 1984*a^4*b^{10}*c + 84480*a^5*b*c^9 - 7680*a^5*b^9*c + 67584*a^6*b*c^8 \\
& - 1280*a^6*b^8*c + 12800*a^7*b^7*c - 67584*a^8*b*c^6 - 2240*a^8*b^6*c - 84 \\
& 480*a^9*b*c^5 - 10240*a^9*b^5*c - 56320*a^{10}*b*c^4 + 3584*a^{10}*b^4*c - 2252 \\
& 8*a^{11}*b*c^3 + 3840*a^{11}*b^3*c - 5120*a^{12}*b*c^2 - 1728*a^{12}*b^2*c + 12672* \\
& a^2*b^2*c^{11} - 26112*a^2*b^3*c^{10} - 17920*a^2*b^4*c^9 + 48000*a^2*b^5*c^8 + \\
& 6400*a^2*b^6*c^7 - 38400*a^2*b^7*c^6 + 3840*a^2*b^8*c^5 + 11520*a^2*b^9*c^4 \\
& - 1664*a^2*b^{10}*c^3 + 45696*a^3*b^2*c^{10} - 83200*a^3*b^3*c^9 - 44800*a^3* \\
& b^4*c^8 + 102400*a^3*b^5*c^7 + 8960*a^3*b^6*c^6 - 43520*a^3*b^7*c^5 + 2560* \\
& a^3*b^8*c^4 + 1664*a^3*b^{10}*c^2 + 94400*a^4*b^2*c^9 - 144000*a^4*b^3*c^8 - \\
& 58880*a^4*b^4*c^7 + 98560*a^4*b^5*c^6 + 4480*a^4*b^6*c^5 - 2560*a^4*b^8*c^3 \\
& - 11520*a^4*b^9*c^2 + 111168*a^5*b^2*c^8 - 124416*a^5*b^3*c^7 - 28672*a^5* \\
& b^4*c^6 - 4480*a^5*b^6*c^4 + 43520*a^5*b^7*c^3 - 3840*a^5*b^8*c^2 + 51456*a \\
& ^6*b^2*c^7 + 28672*a^6*b^4*c^5 - 98560*a^6*b^5*c^4 - 8960*a^6*b^6*c^3 + 384 \\
& 00*a^6*b^7*c^2 - 51456*a^7*b^2*c^6 + 124416*a^7*b^3*c^5 + 58880*a^7*b^4*c^4 \\
& - 102400*a^7*b^5*c^3 - 6400*a^7*b^6*c^2 - 111168*a^8*b^2*c^5 + 144000*a^8* \\
& b^3*c^4 + 44800*a^8*b^4*c^3 - 48000*a^8*b^5*c^2 - 94400*a^9*b^2*c^4 + 83200 \\
& *a^9*b^3*c^3 + 17920*a^9*b^4*c^2 - 45696*a^{10}*b^2*c^3 + 26112*a^{10}*b^3*c^2 \\
& - 12672*a^{11}*b^2*c^2 + 512*a*b*c^{13} - 512*a^{13}*b*c) - 608*a*b^2*c^{11} + 2624 \\
& *a*b^3*c^{10} + 224*a*b^4*c^9 - 6208*a*b^5*c^8 + 2112*a*b^6*c^7 + 6784*a*b^7* \\
& c^6 - 3520*a*b^8*c^5 - 3584*a*b^9*c^4 + 2080*a*b^{10}*c^3 + 832*a*b^{11}*c^2 - \\
& 3840*a^2*b*c^{11} + 992*a^2*b^{11}*c - 17280*a^3*b*c^{10} + 992*a^3*b^{10}*c - 4608 \\
& 0*a^4*b*c^9 - 3136*a^4*b^9*c - 80640*a^5*b*c^8 - 320*a^5*b^8*c - 96768*a^6* \\
& b*c^7 + 3776*a^6*b^7*c - 80640*a^7*b*c^6 - 832*a^7*b^6*c - 46080*a^8*b*c^5 \\
& - 1952*a^8*b^5*c - 17280*a^9*b*c^4 + 736*a^9*b^4*c - 3840*a^{10}*b*c^3 + 352* \\
& a^{10}*b^3*c - 384*a^{11}*b*c^2 - 160*a^{11}*b^2*c - 4192*a^2*b^2*c^{10} + 17888*a^ \\
& 2*b^3*c^9 + 288*a^2*b^4*c^8 - 30080*a^2*b^5*c^7 + 8768*a^2*b^6*c^6 + 22848* \\
& a^2*b^7*c^5 - 8768*a^2*b^8*c^4 - 7808*a^2*b^9*c^3 + 2592*a^2*b^{10}*c^2 - 156 \\
& 48*a^3*b^2*c^9 + 60160*a^3*b^3*c^8 + 1152*a^3*b^4*c^7 - 73472*a^3*b^5*c^6 + \\
& 15424*a^3*b^6*c^5 + 37888*a^3*b^7*c^4 - 8960*a^3*b^8*c^3 - 7552*a^3*b^9*c^ \\
& 2 - 36672*a^4*b^2*c^8 + 120512*a^4*b^3*c^7 + 5376*a^4*b^4*c^6 - 104384*a^4* \\
& b^5*c^5 + 12800*a^4*b^6*c^4 + 34112*a^4*b^7*c^3 - 3712*a^4*b^8*c^2 - 57792* \\
& a^5*b^2*c^7 + 155008*a^5*b^3*c^6 + 12096*a^5*b^4*c^5 - 90496*a^5*b^5*c^4 + \\
& 3776*a^5*b^6*c^3 + 16512*a^5*b^7*c^2 - 63168*a^6*b^2*c^6 + 131264*a^6*b^3*c \\
& ^5 + 14784*a^6*b^4*c^4 - 47488*a^6*b^5*c^3 - 1088*a^6*b^6*c^2 - 48192*a^7*b \\
& ^2*c^5 + 72448*a^7*b^3*c^4 + 10368*a^7*b^4*c^3 - 14080*a^7*b^5*c^2 - 25248* \\
& a^8*b^2*c^4 + 24800*a^8*b^3*c^3 + 4032*a^8*b^4*c^2 - 8672*a^9*b^2*c^3 + 467 \\
& 2*a^9*b^3*c^2 - 1760*a^{10}*b^2*c^2 - 384*a*b*c^{12} - 416*a*b^{12}*c) - \tan(x/2) \\
& *(32*a*b^{12} - 512*a*c^{12} + 128*b*c^{12} + 96*b^{12}*c - 32*b^{13} - 64*c^{13} + 96* \\
& a^2*b^{11} - 96*a^3*b^{10} - 96*a^4*b^9 + 96*a^5*b^8 + 32*a^6*b^7 - 32*a^7*b^6 \\
& - 1728*a^2*c^{11} - 3072*a^3*c^{10} - 2688*a^4*c^9 + 2688*a^6*c^7 + 3072*a^7*c^ \\
& 6 + 1728*a^8*c^5 + 512*a^9*c^4 + 64*a^{10}*c^3 + 160*b^2*c^{11} - 544*b^3*c^{10} \\
& + 64*b^4*c^9 + 896*b^5*c^8 - 608*b^6*c^7 - 672*b^7*c^6 + 800*b^8*c^5 + 160* \\
& b^9*c^4 - 448*b^{10}*c^3 + 64*b^{11}*c^2 + 480*a*b^2*c^{10} - 4352*a*b^3*c^9 + 25
\end{aligned}$$

$$\begin{aligned}
& 60*a*b^4*c^8 + 5248*a*b^5*c^7 - 5664*a*b^6*c^6 - 2240*a*b^7*c^5 + 4320*a*b^8*c^4 - 256*a*b^9*c^3 - 1216*a*b^{10}*c^2 + 5632*a^2*b*c^{10} - 672*a^2*b^{10}*c \\
& + 14336*a^3*b*c^9 - 768*a^3*b^9*c + 23296*a^4*b*c^8 + 1248*a^4*b^8*c + 2508 \\
& 8*a^5*b*c^7 + 576*a^5*b^7*c + 17920*a^6*b*c^6 - 864*a^6*b^6*c + 8192*a^7*b*c^5 - 128*a^7*b^5*c + 2176*a^8*b*c^4 + 192*a^8*b^4*c + 256*a^9*b*c^3 - 1408 \\
& *a^2*b^2*c^9 - 14720*a^2*b^3*c^8 + 13440*a^2*b^4*c^7 + 11904*a^2*b^5*c^6 - 16800*a^2*b^6*c^5 - 1696*a^2*b^7*c^4 + 7168*a^2*b^8*c^3 - 1216*a^2*b^9*c^2 \\
& - 9856*a^3*b^2*c^8 - 27392*a^3*b^3*c^7 + 31232*a^3*b^4*c^6 + 12928*a^3*b^5*c^5 - 23264*a^3*b^6*c^4 + 1152*a^3*b^7*c^3 + 4800*a^3*b^8*c^2 - 22848*a^4*b \\
& ^2*c^7 - 30400*a^4*b^3*c^6 + 39680*a^4*b^4*c^5 + 6272*a^4*b^5*c^4 - 16544*a \\
& ^4*b^6*c^3 + 1824*a^4*b^7*c^2 - 29120*a^5*b^2*c^6 - 20224*a^5*b^3*c^5 + 291 \\
& 84*a^5*b^4*c^4 + 384*a^5*b^5*c^3 - 5856*a^5*b^6*c^2 - 22400*a^6*b^2*c^5 - 7 \\
& 552*a^6*b^3*c^4 + 12160*a^6*b^4*c^3 - 640*a^6*b^5*c^2 - 10368*a^7*b^2*c^4 - \\
& 1280*a^7*b^3*c^3 + 2560*a^7*b^4*c^2 - 2656*a^8*b^2*c^3 - 32*a^8*b^3*c^2 - \\
& 288*a^9*b^2*c^2 + 1280*a*b*c^{11} + 320*a*b^{11}*c)) * (- (8*a*c^7 + b^8 + 24*a^2*c^6 + 24*a^3*c^5 + 8*a^4*c^4 - b^5 * (- (4*a*c - b^2)^3)^{(1/2)} - 2*b^2*c^6 + 3 \\
& *b^4*c^4 - 3*b^6*c^2 - 18*a*b^2*c^5 + 24*a*b^4*c^3 - 3*b*c^4 * (- (4*a*c - b^2)^3)^{(1/2)} - 54*a^2*b^2*c^4 + 33*a^2*b^4*c^2 - 38*a^3*b^2*c^3 + 3*b^3*c^2 * ( \\
& - (4*a*c - b^2)^3)^{(1/2)} - 10*a*b^6*c - 3*a^2*b*c^2 * (- (4*a*c - b^2)^3)^{(1/2)} \\
& - 6*a*b*c^3 * (- (4*a*c - b^2)^3)^{(1/2)} + 4*a*b^3*c * (- (4*a*c - b^2)^3)^{(1/2)}) \\
& / (2 * (3*a^2*b^8 - b^{10} - 3*a^4*b^6 + a^6*b^4 + 16*a^2*c^8 + 96*a^3*c^7 + 240 \\
& *a^4*c^6 + 320*a^5*c^5 + 240*a^6*c^4 + 96*a^7*c^3 + 16*a^8*c^2 + b^4*c^6 - \\
& 3*b^6*c^4 + 3*b^8*c^2 - 8*a*b^2*c^7 + 30*a*b^4*c^5 - 36*a*b^6*c^3 - 36*a^3*b^6*c + 30*a^5*b^4*c - 8*a^7*b^2*c - 96*a^2*b^2*c^6 + 159*a^2*b^4*c^4 - 82* \\
& a^2*b^6*c^2 - 312*a^3*b^2*c^5 + 260*a^3*b^4*c^3 - 448*a^4*b^2*c^4 + 159*a^4 \\
& *b^4*c^2 - 312*a^5*b^2*c^3 - 96*a^6*b^2*c^2 + 14*a*b^8*c))^{(1/2)} * i) / (512* \\
& a*c^{11} + 64*c^{12} + ((- (8*a*c^7 + b^8 + 24*a^2*c^6 + 24*a^3*c^5 + 8*a^4*c^4 \\
& - b^5 * (- (4*a*c - b^2)^3)^{(1/2)} - 2*b^2*c^6 + 3*b^4*c^4 - 3*b^6*c^2 - 18*a*b \\
& ^2*c^5 + 24*a*b^4*c^3 - 3*b*c^4 * (- (4*a*c - b^2)^3)^{(1/2)} - 54*a^2*b^2*c^4 + \\
& 33*a^2*b^4*c^2 - 38*a^3*b^2*c^3 + 3*b^3*c^2 * (- (4*a*c - b^2)^3)^{(1/2)} - 10* \\
& a*b^6*c - 3*a^2*b*c^2 * (- (4*a*c - b^2)^3)^{(1/2)} - 6*a*b*c^3 * (- (4*a*c - b^2)^ \\
& 3)^{(1/2)} + 4*a*b^3*c * (- (4*a*c - b^2)^3)^{(1/2)}) / (2 * (3*a^2*b^8 - b^{10} - 3*a^4 \\
& *b^6 + a^6*b^4 + 16*a^2*c^8 + 96*a^3*c^7 + 240*a^4*c^6 + 320*a^5*c^5 + 240* \\
& a^6*c^4 + 96*a^7*c^3 + 16*a^8*c^2 + b^4*c^6 - 3*b^6*c^4 + 3*b^8*c^2 - 8*a*b \\
& ^2*c^7 + 30*a*b^4*c^5 - 36*a*b^6*c^3 - 36*a^3*b^6*c + 30*a^5*b^4*c - 8*a^7* \\
& b^2*c - 96*a^2*b^2*c^6 + 159*a^2*b^4*c^4 - 82*a^2*b^6*c^2 - 312*a^3*b^2*c^5 \\
& + 260*a^3*b^4*c^3 - 448*a^4*b^2*c^4 + 159*a^4*b^4*c^2 - 312*a^5*b^2*c^3 - \\
& 96*a^6*b^2*c^2 + 14*a*b^8*c))^{(1/2)} * (128*a*c^{13} - 64*a*b^{13} - 32*b^{13}*c + \\
& 32*b^{14} - 96*a^2*b^{12} + 256*a^3*b^{11} + 64*a^4*b^{10} - 384*a^5*b^9 + 64*a^6*b \\
& ^8 + 256*a^7*b^7 - 96*a^8*b^6 - 64*a^9*b^5 + 32*a^{10}*b^4 + 1408*a^2*c^{12} + \\
& 7040*a^3*c^{11} + 21120*a^4*c^{10} + 42240*a^5*c^9 + 59136*a^6*c^8 + 59136*a^7* \\
& c^7 + 42240*a^8*c^6 + 21120*a^9*c^5 + 7040*a^{10}*c^4 + 1408*a^{11}*c^3 + 128*a \\
& ^{12}*c^2 - 32*b^2*c^{12} + 96*b^3*c^{11} + 64*b^4*c^{10} - 416*b^5*c^9 + 96*b^6*c^ \\
& 8 + 704*b^7*c^7 - 384*b^8*c^6 - 576*b^9*c^5 + 416*b^{10}*c^4 + 224*b^{11}*c^3 - \\
& 192*b^{12}*c^2 + \tan(x/2) * (- (8*a*c^7 + b^8 + 24*a^2*c^6 + 24*a^3*c^5 + 8*a^4
\end{aligned}$$

$$\begin{aligned}
& *c^4 - b^5*(-(4*a*c - b^2)^3)^{(1/2)} - 2*b^2*c^6 + 3*b^4*c^4 - 3*b^6*c^2 - 1 \\
& 8*a*b^2*c^5 + 24*a*b^4*c^3 - 3*b*c^4*(-(4*a*c - b^2)^3)^{(1/2)} - 54*a^2*b^2* \\
& c^4 + 33*a^2*b^4*c^2 - 38*a^3*b^2*c^3 + 3*b^3*c^2*(-(4*a*c - b^2)^3)^{(1/2)} \\
& - 10*a*b^6*c - 3*a^2*b*c^2*(-(4*a*c - b^2)^3)^{(1/2)} - 6*a*b*c^3*(-(4*a*c - \\
& b^2)^3)^{(1/2)} + 4*a*b^3*c*(-(4*a*c - b^2)^3)^{(1/2)} / (2*(3*a^2*b^8 - b^10 - \\
& 3*a^4*b^6 + a^6*b^4 + 16*a^2*c^8 + 96*a^3*c^7 + 240*a^4*c^6 + 320*a^5*c^5 + \\
& 240*a^6*c^4 + 96*a^7*c^3 + 16*a^8*c^2 + b^4*c^6 - 3*b^6*c^4 + 3*b^8*c^2 - \\
& 8*a*b^2*c^7 + 30*a*b^4*c^5 - 36*a*b^6*c^3 - 36*a^3*b^6*c + 30*a^5*b^4*c - 8 \\
& *a^7*b^2*c - 96*a^2*b^2*c^6 + 159*a^2*b^4*c^4 - 82*a^2*b^6*c^2 - 312*a^3*b^ \\
& 2*c^5 + 260*a^3*b^4*c^3 - 448*a^4*b^2*c^4 + 159*a^4*b^4*c^2 - 312*a^5*b^2*c \\
& ^3 - 96*a^6*b^2*c^2 + 14*a*b^8*c))^{(1/2)}*(64*a*b^14 - 256*a*c^14 + 256*a^1 \\
& 4*c - 64*b^14*c - 128*a^2*b^13 - 256*a^3*b^12 + 640*a^4*b^11 + 320*a^5*b^10 \\
& - 1280*a^6*b^9 + 1280*a^8*b^7 - 320*a^9*b^6 - 640*a^10*b^5 + 256*a^11*b^4 \\
& + 128*a^12*b^3 - 64*a^13*b^2 - 2816*a^2*c^13 - 13824*a^3*c^12 - 39424*a^4*c \\
& ^11 - 70400*a^5*c^10 - 76032*a^6*c^9 - 33792*a^7*c^8 + 33792*a^8*c^7 + 7603 \\
& 2*a^9*c^6 + 70400*a^10*c^5 + 39424*a^11*c^4 + 13824*a^12*c^3 + 2816*a^13*c^ \\
& 2 + 64*b^2*c^13 - 128*b^3*c^12 - 256*b^4*c^11 + 640*b^5*c^10 + 320*b^6*c^9 \\
& - 1280*b^7*c^8 + 1280*b^9*c^6 - 320*b^10*c^5 - 640*b^11*c^4 + 256*b^12*c^3 \\
& + 128*b^13*c^2 + 1728*a*b^2*c^12 - 3840*a*b^3*c^11 - 3584*a*b^4*c^10 + 1024 \\
& 0*a*b^5*c^9 + 2240*a*b^6*c^8 - 12800*a*b^7*c^7 + 1280*a*b^8*c^6 + 7680*a*b^ \\
& 9*c^5 - 1984*a*b^10*c^4 - 1792*a*b^11*c^3 + 512*a*b^12*c^2 + 5120*a^2*b*c^1 \\
& 2 - 512*a^2*b^12*c + 22528*a^3*b*c^11 + 1792*a^3*b^11*c + 56320*a^4*b*c^10 \\
& + 1984*a^4*b^10*c + 84480*a^5*b*c^9 - 7680*a^5*b^9*c + 67584*a^6*b*c^8 - 12 \\
& 80*a^6*b^8*c + 12800*a^7*b^7*c - 67584*a^8*b*c^6 - 2240*a^8*b^6*c - 84480*a \\
& ^9*b*c^5 - 10240*a^9*b^5*c - 56320*a^10*b*c^4 + 3584*a^10*b^4*c - 22528*a^1 \\
& 1*b*c^3 + 3840*a^11*b^3*c - 5120*a^12*b*c^2 - 1728*a^12*b^2*c + 12672*a^2*b \\
& ^2*c^11 - 26112*a^2*b^3*c^10 - 17920*a^2*b^4*c^9 + 48000*a^2*b^5*c^8 + 6400 \\
& *a^2*b^6*c^7 - 38400*a^2*b^7*c^6 + 3840*a^2*b^8*c^5 + 11520*a^2*b^9*c^4 - 1 \\
& 664*a^2*b^10*c^3 + 45696*a^3*b^2*c^10 - 83200*a^3*b^3*c^9 - 44800*a^3*b^4*c \\
& ^8 + 102400*a^3*b^5*c^7 + 8960*a^3*b^6*c^6 - 43520*a^3*b^7*c^5 + 2560*a^3*b \\
& ^8*c^4 + 1664*a^3*b^10*c^2 + 94400*a^4*b^2*c^9 - 144000*a^4*b^3*c^8 - 58880 \\
& *a^4*b^4*c^7 + 98560*a^4*b^5*c^6 + 4480*a^4*b^6*c^5 - 2560*a^4*b^8*c^3 - 11 \\
& 520*a^4*b^9*c^2 + 111168*a^5*b^2*c^8 - 124416*a^5*b^3*c^7 - 28672*a^5*b^4*c \\
& ^6 - 4480*a^5*b^6*c^4 + 43520*a^5*b^7*c^3 - 3840*a^5*b^8*c^2 + 51456*a^6*b^ \\
& 2*c^7 + 28672*a^6*b^4*c^5 - 98560*a^6*b^5*c^4 - 8960*a^6*b^6*c^3 + 38400*a^ \\
& 6*b^7*c^2 - 51456*a^7*b^2*c^6 + 124416*a^7*b^3*c^5 + 58880*a^7*b^4*c^4 - 10 \\
& 2400*a^7*b^5*c^3 - 6400*a^7*b^6*c^2 - 111168*a^8*b^2*c^5 + 144000*a^8*b^3*c \\
& ^4 + 44800*a^8*b^4*c^3 - 48000*a^8*b^5*c^2 - 94400*a^9*b^2*c^4 + 83200*a^9* \\
& b^3*c^3 + 17920*a^9*b^4*c^2 - 45696*a^10*b^2*c^3 + 26112*a^10*b^3*c^2 - 126 \\
& 72*a^11*b^2*c^2 + 512*a*b*c^13 - 512*a^13*b*c) - 608*a*b^2*c^11 + 2624*a*b^ \\
& 3*c^10 + 224*a*b^4*c^9 - 6208*a*b^5*c^8 + 2112*a*b^6*c^7 + 6784*a*b^7*c^6 - \\
& 3520*a*b^8*c^5 - 3584*a*b^9*c^4 + 2080*a*b^10*c^3 + 832*a*b^11*c^2 - 3840* \\
& a^2*b*c^11 + 992*a^2*b^11*c - 17280*a^3*b*c^10 + 992*a^3*b^10*c - 46080*a^4 \\
& *b*c^9 - 3136*a^4*b^9*c - 80640*a^5*b*c^8 - 320*a^5*b^8*c - 96768*a^6*b*c^7 \\
& + 3776*a^6*b^7*c - 80640*a^7*b*c^6 - 832*a^7*b^6*c - 46080*a^8*b*c^5 - 195
\end{aligned}$$



$$\begin{aligned}
& 2*a^8*b^5*c - 17280*a^9*b*c^4 + 736*a^9*b^4*c - 3840*a^{10}*b*c^3 + 352*a^{10}* \\
& b^3*c - 384*a^{11}*b*c^2 - 160*a^{11}*b^2*c - 4192*a^2*b^2*c^{10} + 17888*a^2*b^3 \\
& *c^9 + 288*a^2*b^4*c^8 - 30080*a^2*b^5*c^7 + 8768*a^2*b^6*c^6 + 22848*a^2*b \\
& ^7*c^5 - 8768*a^2*b^8*c^4 - 7808*a^2*b^9*c^3 + 2592*a^2*b^{10}*c^2 - 15648*a^ \\
& 3*b^2*c^9 + 60160*a^3*b^3*c^8 + 1152*a^3*b^4*c^7 - 73472*a^3*b^5*c^6 + 1542 \\
& 4*a^3*b^6*c^5 + 37888*a^3*b^7*c^4 - 8960*a^3*b^8*c^3 - 7552*a^3*b^9*c^2 - 3 \\
& 6672*a^4*b^2*c^8 + 120512*a^4*b^3*c^7 + 5376*a^4*b^4*c^6 - 104384*a^4*b^5*c \\
& ^5 + 12800*a^4*b^6*c^4 + 34112*a^4*b^7*c^3 - 3712*a^4*b^8*c^2 - 57792*a^5*b \\
& ^2*c^7 + 155008*a^5*b^3*c^6 + 12096*a^5*b^4*c^5 - 90496*a^5*b^5*c^4 + 3776* \\
& a^5*b^6*c^3 + 16512*a^5*b^7*c^2 - 63168*a^6*b^2*c^6 + 131264*a^6*b^3*c^5 + \\
& 14784*a^6*b^4*c^4 - 47488*a^6*b^5*c^3 - 1088*a^6*b^6*c^2 - 48192*a^7*b^2*c^ \\
& 5 + 72448*a^7*b^3*c^4 + 10368*a^7*b^4*c^3 - 14080*a^7*b^5*c^2 - 25248*a^8*b \\
& ^2*c^4 + 24800*a^8*b^3*c^3 + 4032*a^8*b^4*c^2 - 8672*a^9*b^2*c^3 + 4672*a^9 \\
& *b^3*c^2 - 1760*a^{10}*b^2*c^2 - 384*a*b*c^{12} - 416*a*b^{12}*c) + \tan(x/2)*(32* \\
& a*b^{12} - 512*a*c^{12} + 128*b*c^{12} + 96*b^{12}*c - 32*b^{13} - 64*c^{13} + 96*a^2*b \\
& ^{11} - 96*a^3*b^{10} - 96*a^4*b^9 + 96*a^5*b^8 + 32*a^6*b^7 - 32*a^7*b^6 - 172 \\
& 8*a^2*c^{11} - 3072*a^3*c^{10} - 2688*a^4*c^9 + 2688*a^6*c^7 + 3072*a^7*c^6 + 1 \\
& 728*a^8*c^5 + 512*a^9*c^4 + 64*a^{10}*c^3 + 160*b^2*c^{11} - 544*b^3*c^{10} + 64* \\
& b^4*c^9 + 896*b^5*c^8 - 608*b^6*c^7 - 672*b^7*c^6 + 800*b^8*c^5 + 160*b^9*c \\
& ^4 - 448*b^{10}*c^3 + 64*b^{11}*c^2 + 480*a*b^2*c^{10} - 4352*a*b^3*c^9 + 2560*a* \\
& b^4*c^8 + 5248*a*b^5*c^7 - 5664*a*b^6*c^6 - 2240*a*b^7*c^5 + 4320*a*b^8*c^4 \\
& - 256*a*b^9*c^3 - 1216*a*b^{10}*c^2 + 5632*a^2*b*c^{10} - 672*a^2*b^{10}*c + 143 \\
& 36*a^3*b*c^9 - 768*a^3*b^9*c + 23296*a^4*b*c^8 + 1248*a^4*b^8*c + 25088*a^5 \\
& *b*c^7 + 576*a^5*b^7*c + 17920*a^6*b*c^6 - 864*a^6*b^6*c + 8192*a^7*b*c^5 - \\
& 128*a^7*b^5*c + 2176*a^8*b*c^4 + 192*a^8*b^4*c + 256*a^9*b*c^3 - 1408*a^2* \\
& b^2*c^9 - 14720*a^2*b^3*c^8 + 13440*a^2*b^4*c^7 + 11904*a^2*b^5*c^6 - 16800 \\
& *a^2*b^6*c^5 - 1696*a^2*b^7*c^4 + 7168*a^2*b^8*c^3 - 1216*a^2*b^9*c^2 - 985 \\
& 6*a^3*b^2*c^8 - 27392*a^3*b^3*c^7 + 31232*a^3*b^4*c^6 + 12928*a^3*b^5*c^5 - \\
& 23264*a^3*b^6*c^4 + 1152*a^3*b^7*c^3 + 4800*a^3*b^8*c^2 - 22848*a^4*b^2*c^ \\
& 7 - 30400*a^4*b^3*c^6 + 39680*a^4*b^4*c^5 + 6272*a^4*b^5*c^4 - 16544*a^4*b^ \\
& 6*c^3 + 1824*a^4*b^7*c^2 - 29120*a^5*b^2*c^6 - 20224*a^5*b^3*c^5 + 29184*a^ \\
& 5*b^4*c^4 + 384*a^5*b^5*c^3 - 5856*a^5*b^6*c^2 - 22400*a^6*b^2*c^5 - 7552*a \\
& ^6*b^3*c^4 + 12160*a^6*b^4*c^3 - 640*a^6*b^5*c^2 - 10368*a^7*b^2*c^4 - 1280 \\
& *a^7*b^3*c^3 + 2560*a^7*b^4*c^2 - 2656*a^8*b^2*c^3 - 32*a^8*b^3*c^2 - 288*a \\
& ^9*b^2*c^2 + 1280*a*b*c^{11} + 320*a*b^{11}*c)*(-(8*a*c^7 + b^8 + 24*a^2*c^6 + \\
& 24*a^3*c^5 + 8*a^4*c^4 - b^5*(-(4*a*c - b^2)^3)^{(1/2)} - 2*b^2*c^6 + 3*b^4* \\
& c^4 - 3*b^6*c^2 - 18*a*b^2*c^5 + 24*a*b^4*c^3 - 3*b*c^4*(-(4*a*c - b^2)^3)^{( \\
& 1/2)} - 54*a^2*b^2*c^4 + 33*a^2*b^4*c^2 - 38*a^3*b^2*c^3 + 3*b^3*c^2*(-(4*a \\
& *c - b^2)^3)^{(1/2)} - 10*a*b^6*c - 3*a^2*b*c^2*(-(4*a*c - b^2)^3)^{(1/2)} - 6* \\
& a*b*c^3*(-(4*a*c - b^2)^3)^{(1/2)} + 4*a*b^3*c*(-(4*a*c - b^2)^3)^{(1/2)})/(2*( \\
& 3*a^2*b^8 - b^{10} - 3*a^4*b^6 + a^6*b^4 + 16*a^2*c^8 + 96*a^3*c^7 + 240*a^4* \\
& c^6 + 320*a^5*c^5 + 240*a^6*c^4 + 96*a^7*c^3 + 16*a^8*c^2 + b^4*c^6 - 3*b^6 \\
& *c^4 + 3*b^8*c^2 - 8*a*b^2*c^7 + 30*a*b^4*c^5 - 36*a*b^6*c^3 - 36*a^3*b^6*c \\
& + 30*a^5*b^4*c - 8*a^7*b^2*c - 96*a^2*b^2*c^6 + 159*a^2*b^4*c^4 - 82*a^2*b \\
& ^6*c^2 - 312*a^3*b^2*c^5 + 260*a^3*b^4*c^3 - 448*a^4*b^2*c^4 + 159*a^4*b^4*
\end{aligned}$$

$$\begin{aligned}
& c^2 - 312a^5b^2c^3 - 96a^6b^2c^2 + 14a^8b^8c))^{(1/2)} + (((-8a^8c^7 \\
& + b^8 + 24a^2c^6 + 24a^3c^5 + 8a^4c^4 - b^5(-(4a^8c^7 \\
& - 2b^2c^6 + 3b^4c^4 - 3b^6c^2 - 18a^2b^2c^5 + 24a^2b^4c^3 - 3b^8c^4 \\
& *(-(4a^8c^7 - b^2)^3)^{(1/2)} - 54a^2b^2c^4 + 33a^2b^4c^2 - 38a^3b^2c^3 \\
& + 3b^3c^2*(-(4a^8c^7 - b^2)^3)^{(1/2)} - 10a^2b^6c - 3a^2b^2c^2*(-(4a^8c^7 \\
& - b^2)^3)^{(1/2)} - 6a^2b^3c^3*(-(4a^8c^7 - b^2)^3)^{(1/2)} + 4a^2b^3c^3*(-(4a^8c^7 \\
& - b^2)^3)^{(1/2)))/(2*(3a^2b^8 - b^{10} - 3a^4b^6 + a^6b^4 + 16a^2c^8 + 9 \\
& 6a^3c^7 + 240a^4c^6 + 320a^5c^5 + 240a^6c^4 + 96a^7c^3 + 16a^8c^2 \\
& + b^4c^6 - 3b^6c^4 + 3b^8c^2 - 8a^2b^2c^7 + 30a^2b^4c^5 - 36a^2b^6c^3 - 36a^3b^6c \\
& + 30a^5b^4c - 8a^7b^2c - 96a^2b^2c^6 + 159a^2b^4c^4 - 82a^2b^6c^2 - 312a^3b^2c^5 + 260a^3b^4c^3 - 448a^4b^2c^4 \\
& + 159a^4b^4c^2 - 312a^5b^2c^3 - 96a^6b^2c^2 + 14a^8b^8c))^{(1/2)}*(128a^8c^13 - 64a^8b^13 - 32b^13c + 32b^14 - 96a^2b^12 + 256a^3 \\
& *b^11 + 64a^4b^10 - 384a^5b^9 + 64a^6b^8 + 256a^7b^7 - 96a^8b^6 - 64a^9b^5 + 32a^{10}b^4 + 1408a^2c^{12} + 7040a^3c^{11} + 21120a^4c^{10} \\
& + 42240a^5c^9 + 59136a^6c^8 + 59136a^7c^7 + 42240a^8c^6 + 21120a^9c^5 + 7040a^{10}c^4 + 1408a^{11}c^3 + 128a^{12}c^2 - 32b^2c^{12} + 96b^3c^{11} \\
& + 64b^4c^{10} - 416b^5c^9 + 96b^6c^8 + 704b^7c^7 - 384b^8c^6 - 576b^9c^5 + 416b^{10}c^4 + 224b^{11}c^3 - 192b^{12}c^2 - \tan(x/2)*(-(8a^8c^7 \\
& + b^8 + 24a^2c^6 + 24a^3c^5 + 8a^4c^4 - b^5(-(4a^8c^7 - 2b^2c^6 + 3b^4c^4 - 3b^6c^2 - 18a^2b^2c^5 + 24a^2b^4c^3 - 3b^8c^4 \\
& *(-(4a^8c^7 - b^2)^3)^{(1/2)} - 54a^2b^2c^4 + 33a^2b^4c^2 - 38a^3b^2c^3 + 3b^3c^2*(-(4a^8c^7 - b^2)^3)^{(1/2)} - 10a^2b^6c - 3a^2b^2c^2*(-(4a^8c^7 \\
& - b^2)^3)^{(1/2)} - 6a^2b^3c^3*(-(4a^8c^7 - b^2)^3)^{(1/2)} + 4a^2b^3c^3*(-(4a^8c^7 - b^2)^3)^{(1/2)))/(2*(3a^2b^8 - b^{10} - 3a^4b^6 + a^6b^4 + 16a^2c^8 + 96a^3c^7 \\
& + 240a^4c^6 + 320a^5c^5 + 240a^6c^4 + 96a^7c^3 + 16a^8c^2 + b^4c^6 - 3b^6c^4 + 3b^8c^2 - 8a^2b^2c^7 + 30a^2b^4c^5 - 36a^2b^6c^3 - 36a^3b^6c \\
& + 30a^5b^4c - 8a^7b^2c - 96a^2b^2c^6 + 159a^2b^4c^4 - 82a^2b^6c^2 - 312a^3b^2c^5 + 260a^3b^4c^3 - 448a^4b^2c^4 + 159a^4b^4c^2 - 312a^5b^2c^3 - 96a^6b^2c^2 + 14a^8b^8c \\
& c))^{(1/2)}*(64a^8b^14 - 256a^8c^14 + 256a^{14}c - 64b^{14}c - 128a^2b^13 - 256a^3b^12 + 640a^4b^11 + 320a^5b^10 - 1280a^6b^9 + 1280a^8b^7 \\
& - 320a^9b^6 - 640a^{10}b^5 + 256a^{11}b^4 + 128a^{12}b^3 - 64a^{13}b^2 - 2816a^2c^{13} - 13824a^3c^{12} - 39424a^4c^{11} - 70400a^5c^{10} - 76032a^6c^9 \\
& - 33792a^7c^8 + 33792a^8c^7 + 76032a^9c^6 + 70400a^{10}c^5 + 39424a^{11}c^4 + 13824a^{12}c^3 + 2816a^{13}c^2 + 64b^2c^{13} - 128b^3c^{12} \\
& - 256b^4c^{11} + 640b^5c^{10} + 320b^6c^9 - 1280b^7c^8 + 1280b^9c^6 - 320b^{10}c^5 - 640b^{11}c^4 + 256b^{12}c^3 + 128b^{13}c^2 + 1728a^2b^2c^{12} \\
& - 3840a^2b^3c^{11} - 3584a^2b^4c^{10} + 10240a^2b^5c^9 + 2240a^2b^6c^8 - 12800a^2b^7c^7 + 1280a^2b^8c^6 + 7680a^2b^9c^5 - 1984a^2b^{10}c^4 - 1792a^2b^{11}c^3 \\
& + 512a^2b^{12}c^2 + 5120a^2b^2c^{12} - 512a^2b^2c^{12} + 22528a^3b^2c^{11} + 1792a^3b^2c^{11} + 56320a^4b^2c^{10} + 1984a^4b^2c^{10} + 84480a^5b^2c^9 \\
& - 7680a^5b^2c^9 + 67584a^6b^2c^8 - 1280a^6b^2c^8 + 12800a^7b^2c^7 - 67584a^8b^2c^6 - 2240a^8b^2c^6 - 84480a^9b^2c^5 - 10240a^9b^2c^5 - 56320a^{10}b^2c^4 \\
& + 3584a^{10}b^2c^4 - 22528a^{11}b^2c^3 + 3840a^{11}b^2c^3 - 512
\end{aligned}$$

$$\begin{aligned}
& 0*a^{12}*b*c^2 - 1728*a^{12}*b^2*c + 12672*a^2*b^2*c^{11} - 26112*a^2*b^3*c^{10} - \\
& 17920*a^2*b^4*c^9 + 48000*a^2*b^5*c^8 + 6400*a^2*b^6*c^7 - 38400*a^2*b^7*c^6 + 3840*a^2*b^8*c^5 + 11520*a^2*b^9*c^4 - 1664*a^2*b^{10}*c^3 + 45696*a^3*b^2*c^{10} - \\
& 83200*a^3*b^3*c^9 - 44800*a^3*b^4*c^8 + 102400*a^3*b^5*c^7 + 8960*a^3*b^6*c^6 - 43520*a^3*b^7*c^5 + 2560*a^3*b^8*c^4 + 1664*a^3*b^{10}*c^2 + 94 \\
& 400*a^4*b^2*c^9 - 144000*a^4*b^3*c^8 - 58880*a^4*b^4*c^7 + 98560*a^4*b^5*c^6 + 4480*a^4*b^6*c^5 - 2560*a^4*b^8*c^3 - 11520*a^4*b^9*c^2 + 111168*a^5*b^2*c^8 - \\
& 124416*a^5*b^3*c^7 - 28672*a^5*b^4*c^6 - 4480*a^5*b^6*c^4 + 43520*a^5*b^7*c^3 - 3840*a^5*b^8*c^2 + 51456*a^6*b^2*c^7 + 28672*a^6*b^4*c^5 - 985 \\
& 60*a^6*b^5*c^4 - 8960*a^6*b^6*c^3 + 38400*a^6*b^7*c^2 - 51456*a^7*b^2*c^6 + 124416*a^7*b^3*c^5 + 58880*a^7*b^4*c^4 - 102400*a^7*b^5*c^3 - 6400*a^7*b^6 \\
& *c^2 - 111168*a^8*b^2*c^5 + 144000*a^8*b^3*c^4 + 44800*a^8*b^4*c^3 - 48000* \\
& a^8*b^5*c^2 - 94400*a^9*b^2*c^4 + 83200*a^9*b^3*c^3 + 17920*a^9*b^4*c^2 - 4 \\
& 5696*a^{10}*b^2*c^3 + 26112*a^{10}*b^3*c^2 - 12672*a^{11}*b^2*c^2 + 512*a*b*c^{13} \\
& - 512*a^{13}*b*c) - 608*a*b^2*c^{11} + 2624*a*b^3*c^{10} + 224*a*b^4*c^9 - 6208*a \\
& *b^5*c^8 + 2112*a*b^6*c^7 + 6784*a*b^7*c^6 - 3520*a*b^8*c^5 - 3584*a*b^9*c^4 + 2080*a*b^{10}*c^3 + 832*a*b^{11}*c^2 - 3840*a^2*b*c^{11} + 992*a^2*b^{11}*c - 1 \\
& 7280*a^3*b*c^{10} + 992*a^3*b^{10}*c - 46080*a^4*b*c^9 - 3136*a^4*b^9*c - 80640 \\
& *a^5*b*c^8 - 320*a^5*b^8*c - 96768*a^6*b*c^7 + 3776*a^6*b^7*c - 80640*a^7*b \\
& *c^6 - 832*a^7*b^6*c - 46080*a^8*b*c^5 - 1952*a^8*b^5*c - 17280*a^9*b*c^4 + \\
& 736*a^9*b^4*c - 3840*a^{10}*b*c^3 + 352*a^{10}*b^3*c - 384*a^{11}*b*c^2 - 160*a^{11}*b^2*c - 4192*a^2*b^2*c^{10} + 17888*a^2*b^3*c^9 + 288*a^2*b^4*c^8 - 30080* \\
& a^2*b^5*c^7 + 8768*a^2*b^6*c^6 + 22848*a^2*b^7*c^5 - 8768*a^2*b^8*c^4 - 780 \\
& 8*a^2*b^9*c^3 + 2592*a^2*b^{10}*c^2 - 15648*a^3*b^2*c^9 + 60160*a^3*b^3*c^8 + \\
& 1152*a^3*b^4*c^7 - 73472*a^3*b^5*c^6 + 15424*a^3*b^6*c^5 + 37888*a^3*b^7*c^4 - \\
& 8960*a^3*b^8*c^3 - 7552*a^3*b^9*c^2 - 36672*a^4*b^2*c^8 + 120512*a^4*b^3*c^7 + \\
& 5376*a^4*b^4*c^6 - 104384*a^4*b^5*c^5 + 12800*a^4*b^6*c^4 + 34112* \\
& a^4*b^7*c^3 - 3712*a^4*b^8*c^2 - 57792*a^5*b^2*c^7 + 155008*a^5*b^3*c^6 + 1 \\
& 2096*a^5*b^4*c^5 - 90496*a^5*b^5*c^4 + 3776*a^5*b^6*c^3 + 16512*a^5*b^7*c^2 - \\
& 63168*a^6*b^2*c^6 + 131264*a^6*b^3*c^5 + 14784*a^6*b^4*c^4 - 47488*a^6*b^5*c^3 - \\
& 1088*a^6*b^6*c^2 - 48192*a^7*b^2*c^5 + 72448*a^7*b^3*c^4 + 10368*a^7*b^4*c^3 - \\
& 14080*a^7*b^5*c^2 - 25248*a^8*b^2*c^4 + 24800*a^8*b^3*c^3 + 40 \\
& 32*a^8*b^4*c^2 - 8672*a^9*b^2*c^3 + 4672*a^9*b^3*c^2 - 1760*a^{10}*b^2*c^2 - \\
& 384*a*b*c^{12} - 416*a*b^{12}*c) - \tan(x/2)*(32*a*b^{12} - 512*a*c^{12} + 128*b*c^{12} \\
& + 96*b^{12}*c - 32*b^{13} - 64*c^{13} + 96*a^2*b^{11} - 96*a^3*b^{10} - 96*a^4*b^9 \\
& + 96*a^5*b^8 + 32*a^6*b^7 - 32*a^7*b^6 - 1728*a^2*c^{11} - 3072*a^3*c^{10} - 26 \\
& 88*a^4*c^9 + 2688*a^6*c^7 + 3072*a^7*c^6 + 1728*a^8*c^5 + 512*a^9*c^4 + 64* \\
& a^{10}*c^3 + 160*b^2*c^{11} - 544*b^3*c^{10} + 64*b^4*c^9 + 896*b^5*c^8 - 608*b^6 \\
& *c^7 - 672*b^7*c^6 + 800*b^8*c^5 + 160*b^9*c^4 - 448*b^{10}*c^3 + 64*b^{11}*c^2 \\
& + 480*a*b^2*c^{10} - 4352*a*b^3*c^9 + 2560*a*b^4*c^8 + 5248*a*b^5*c^7 - 5664 \\
& *a*b^6*c^6 - 2240*a*b^7*c^5 + 4320*a*b^8*c^4 - 256*a*b^9*c^3 - 1216*a*b^{10}* \\
& c^2 + 5632*a^2*b*c^{10} - 672*a^2*b^{10}*c + 14336*a^3*b*c^9 - 768*a^3*b^9*c + \\
& 23296*a^4*b*c^8 + 1248*a^4*b^8*c + 25088*a^5*b*c^7 + 576*a^5*b^7*c + 17920* \\
& a^6*b*c^6 - 864*a^6*b^6*c + 8192*a^7*b*c^5 - 128*a^7*b^5*c + 2176*a^8*b*c^4 \\
& + 192*a^8*b^4*c + 256*a^9*b*c^3 - 1408*a^2*b^2*c^9 - 14720*a^2*b^3*c^8 + 1
\end{aligned}$$

$$\begin{aligned}
& 3440*a^2*b^4*c^7 + 11904*a^2*b^5*c^6 - 16800*a^2*b^6*c^5 - 1696*a^2*b^7*c^4 \\
& + 7168*a^2*b^8*c^3 - 1216*a^2*b^9*c^2 - 9856*a^3*b^2*c^8 - 27392*a^3*b^3*c^7 \\
& + 31232*a^3*b^4*c^6 + 12928*a^3*b^5*c^5 - 23264*a^3*b^6*c^4 + 1152*a^3*b^7*c^3 \\
& + 4800*a^3*b^8*c^2 - 22848*a^4*b^2*c^7 - 30400*a^4*b^3*c^6 + 39680*a^4*b^4*c^5 \\
& + 6272*a^4*b^5*c^4 - 16544*a^4*b^6*c^3 + 1824*a^4*b^7*c^2 - 29120*a^5*b^2*c^6 \\
& - 20224*a^5*b^3*c^5 + 29184*a^5*b^4*c^4 + 384*a^5*b^5*c^3 - 5856*a^5*b^6*c^2 \\
& - 22400*a^6*b^2*c^5 - 7552*a^6*b^3*c^4 + 12160*a^6*b^4*c^3 - 640*a^6*b^5*c^2 \\
& - 10368*a^7*b^2*c^4 - 1280*a^7*b^3*c^3 + 2560*a^7*b^4*c^2 - 2656*a^8*b^2*c^3 \\
& - 32*a^8*b^3*c^2 - 288*a^9*b^2*c^2 + 1280*a*b*c^11 + 320*a*b^11*c)) * (- (8*a*c^7 + b^8 + 24*a^2*c^6 + 24*a^3*c^5 + 8*a^4*c^4 - b^5 * (- (4*a*c - b^2)^3)^{1/2} - 2*b^2*c^6 + 3*b^4*c^4 - 3*b^6*c^2 - 18*a*b^2*c^5 + 24*a*b^4*c^3 - 3*b*c^4 * (- (4*a*c - b^2)^3)^{1/2} - 54*a^2*b^2*c^4 + 33*a^2*b^4*c^2 - 38*a^3*b^2*c^3 + 3*b^3*c^2 * (- (4*a*c - b^2)^3)^{1/2} - 10*a*b^6*c - 3*a^2*b*c^2 * (- (4*a*c - b^2)^3)^{1/2} - 6*a*b*c^3 * (- (4*a*c - b^2)^3)^{1/2} ) + 4*a*b^3*c * (- (4*a*c - b^2)^3)^{1/2} ) / (2 * (3*a^2*b^8 - b^10 - 3*a^4*b^6 + a^6*b^4 + 16*a^2*c^8 + 96*a^3*c^7 + 240*a^4*c^6 + 320*a^5*c^5 + 240*a^6*c^4 + 96*a^7*c^3 + 16*a^8*c^2 + b^4*c^6 - 3*b^6*c^4 + 3*b^8*c^2 - 8*a*b^2*c^7 + 30*a*b^4*c^5 - 36*a*b^6*c^3 - 36*a^3*b^6*c + 30*a^5*b^4*c - 8*a^7*b^2*c - 96*a^2*b^2*c^6 + 159*a^2*b^4*c^4 - 82*a^2*b^6*c^2 - 312*a^3*b^2*c^5 + 260*a^3*b^4*c^3 - 448*a^4*b^2*c^4 + 159*a^4*b^4*c^2 - 312*a^5*b^2*c^3 - 96*a^6*b^2*c^2 + 14*a*b^8*c))^{1/2} + 1792*a^2*c^10 + 3584*a^3*c^9 + 4480*a^4*c^8 + 3584*a^5*c^7 + 1792*a^6*c^6 + 512*a^7*c^5 + 64*a^8*c^4 - 320*b^2*c^10 + 64*b^3*c^9 + 576*b^4*c^8 - 192*b^5*c^7 - 448*b^6*c^6 + 192*b^7*c^5 + 128*b^8*c^4 - 64*b^9*c^3 - 1984*a*b^2*c^9 + 384*a*b^3*c^8 + 2496*a*b^4*c^7 - 768*a*b^5*c^6 - 1088*a*b^6*c^5 + 384*a*b^7*c^4 + 64*a*b^8*c^3 - 5184*a^2*b^2*c^8 + 960*a^2*b^3*c^7 + 4224*a^2*b^4*c^6 - 1152*a^2*b^5*c^5 - 832*a^2*b^6*c^4 + 192*a^2*b^7*c^3 - 7360*a^3*b^2*c^7 + 1280*a^3*b^3*c^6 + 3456*a^3*b^4*c^5 - 768*a^3*b^5*c^4 - 192*a^3*b^6*c^3 - 6080*a^4*b^2*c^6 + 960*a^4*b^3*c^5 + 1344*a^4*b^4*c^4 - 192*a^4*b^5*c^3 - 2880*a^5*b^2*c^5 + 384*a^5*b^3*c^4 + 192*a^5*b^4*c^3 - 704*a^6*b^2*c^4 + 64*a^6*b^3*c^3 - 64*a^7*b^2*c^3)) * (- (8*a*c^7 + b^8 + 24*a^2*c^6 + 24*a^3*c^5 + 8*a^4*c^4 - b^5 * (- (4*a*c - b^2)^3)^{1/2} - 2*b^2*c^6 + 3*b^4*c^4 - 3*b^6*c^2 - 18*a*b^2*c^5 + 24*a*b^4*c^3 - 3*b*c^4 * (- (4*a*c - b^2)^3)^{1/2} - 54*a^2*b^2*c^4 + 33*a^2*b^4*c^2 - 38*a^3*b^2*c^3 + 3*b^3*c^2 * (- (4*a*c - b^2)^3)^{1/2} - 10*a*b^6*c - 3*a^2*b*c^2 * (- (4*a*c - b^2)^3)^{1/2} - 6*a*b*c^3 * (- (4*a*c - b^2)^3)^{1/2} + 4*a*b^3*c * (- (4*a*c - b^2)^3)^{1/2} ) / (2 * (3*a^2*b^8 - b^10 - 3*a^4*b^6 + a^6*b^4 + 16*a^2*c^8 + 96*a^3*c^7 + 240*a^4*c^6 + 320*a^5*c^5 + 240*a^6*c^4 + 96*a^7*c^3 + 16*a^8*c^2 + b^4*c^6 - 3*b^6*c^4 + 3*b^8*c^2 - 8*a*b^2*c^7 + 30*a*b^4*c^5 - 36*a*b^6*c^3 - 36*a^3*b^6*c + 30*a^5*b^4*c - 8*a^7*b^2*c - 96*a^2*b^2*c^6 + 159*a^2*b^4*c^4 - 82*a^2*b^6*c^2 - 312*a^3*b^2*c^5 + 260*a^3*b^4*c^3 - 448*a^4*b^2*c^4 + 159*a^4*b^4*c^2 - 312*a^5*b^2*c^3 - 96*a^6*b^2*c^2 + 14*a*b^8*c))^{1/2} * 2i + \tan(x/2) / (2*a - 2*b + 2*c) - (a - b + c) / (\tan(x/2) * (a + b + c) * (2*a - 2*b + 2*c))
\end{aligned}$$

### 3.9 $\int \frac{\sin(x)}{-2+\cos(x)+\cos^2(x)} dx$

Optimal result . . . . .	157
Rubi [A] (verified) . . . . .	157
Mathematica [A] (verified) . . . . .	158
Maple [A] (verified) . . . . .	158
Fricas [A] (verification not implemented) . . . . .	159
Sympy [A] (verification not implemented) . . . . .	159
Maxima [A] (verification not implemented) . . . . .	160
Giac [A] (verification not implemented) . . . . .	160
Mupad [B] (verification not implemented) . . . . .	160

#### Optimal result

Integrand size = 13, antiderivative size = 21

$$\int \frac{\sin(x)}{-2 + \cos(x) + \cos^2(x)} dx = -\frac{1}{3} \log(1 - \cos(x)) + \frac{1}{3} \log(2 + \cos(x))$$

[Out] -1/3\*ln(1-cos(x))+1/3\*ln(2+cos(x))

#### Rubi [A] (verified)

Time = 0.03 (sec) , antiderivative size = 21, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3,  $\frac{\text{number of rules}}{\text{integrand size}} = 0.231$ , Rules used = {3340, 630, 31}

$$\int \frac{\sin(x)}{-2 + \cos(x) + \cos^2(x)} dx = \frac{1}{3} \log(\cos(x) + 2) - \frac{1}{3} \log(1 - \cos(x))$$

[In] Int[Sin[x]/(-2 + Cos[x] + Cos[x]^2),x]

[Out] -1/3\*Log[1 - Cos[x]] + Log[2 + Cos[x]]/3

#### Rule 31

Int[((a\_) + (b\_.)\*(x\_))<sup>(-1)</sup>, x\_Symbol] := Simp[Log[RemoveContent[a + b\*x, x]]/b, x] /; FreeQ[{a, b}, x]

#### Rule 630

Int[((a\_.) + (b\_.)\*(x\_) + (c\_.)\*(x\_)^2)<sup>(-1)</sup>, x\_Symbol] := With[{q = Rt[b^2 - 4\*a\*c, 2]}, Dist[c/q, Int[1/Simp[b/2 - q/2 + c\*x, x], x], x] - Dist[c/q, Int[1/Simp[b/2 + q/2 + c\*x, x], x], x] /; FreeQ[{a, b, c}, x] && NeQ[b^2

- 4\*a\*c, 0] && PosQ[b^2 - 4\*a\*c] && PerfectSquareQ[b^2 - 4\*a\*c]

### Rule 3340

```
Int[((a_.) + (b_.)*(cos[(d_.) + (e_.)*(x_)]*(f_.))^(n_.) + (c_.)*(cos[(d_.)
+ (e_.)*(x_)]*(f_.))^(n2_.))^(p_.)*sin[(d_.) + (e_.)*(x_)]^(m_.), x_Symbol
] :> Module[{g = FreeFactors[Cos[d + e*x], x]}, Dist[-g/e, Subst[Int[(1 - g
^2*x^2)^((m - 1)/2)*(a + b*(f*g*x)^n + c*(f*g*x)^(2*n))^p, x], x, Cos[d + e
*x]/g], x]] /; FreeQ[{a, b, c, d, e, f, n, p}, x] && EqQ[n2, 2*n] && Intege
rQ[(m - 1)/2]
```

### Rubi steps

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

### Mathematica [A] (verified)

Time = 0.02 (sec) , antiderivative size = 19, normalized size of antiderivative = 0.90

$$\int \frac{\sin(x)}{-2 + \cos(x) + \cos^2(x)} dx = \frac{1}{3}\left(\log(2 + \cos(x)) - 2\log\left(\sin\left(\frac{x}{2}\right)\right)\right)$$

[In] Integrate[Sin[x]/(-2 + Cos[x] + Cos[x]^2),x]

[Out] (Log[2 + Cos[x]] - 2\*Log[Sin[x/2]])/3

### Maple [A] (verified)

Time = 0.20 (sec) , antiderivative size = 16, normalized size of antiderivative = 0.76

method	result	size
derivativedivides	$-\frac{\ln(\cos(x)-1)}{3} + \frac{\ln(\cos(x)+2)}{3}$	16
default	$-\frac{\ln(\cos(x)-1)}{3} + \frac{\ln(\cos(x)+2)}{3}$	16
norman	$-\frac{2\ln(\tan(\frac{x}{2}))}{3} + \frac{\ln(\tan^2(\frac{x}{2})+3)}{3}$	20
parallelrisc	$\ln\left(\frac{1}{\tan(\frac{x}{2})^{\frac{2}{3}}}\right) + \ln\left((\tan^2(\frac{x}{2}) + 3)^{\frac{1}{3}}\right)$	20
risch	$-\frac{2\ln(e^{ix}-1)}{3} + \frac{\ln(e^{2ix}+4e^{ix}+1)}{3}$	29

[In] `int(sin(x)/(-2+cos(x)+cos(x)^2),x,method=_RETURNVERBOSE)`

[Out]  $-1/3*\ln(\cos(x)-1)+1/3*\ln(\cos(x)+2)$

### Fricas [A] (verification not implemented)

none

Time = 0.25 (sec) , antiderivative size = 17, normalized size of antiderivative = 0.81

$$\int \frac{\sin(x)}{-2 + \cos(x) + \cos^2(x)} dx = \frac{1}{3} \log(\cos(x) + 2) - \frac{1}{3} \log\left(-\frac{1}{2} \cos(x) + \frac{1}{2}\right)$$

[In] `integrate(sin(x)/(-2+cos(x)+cos(x)^2),x, algorithm="fricas")`

[Out]  $1/3*\log(\cos(x) + 2) - 1/3*\log(-1/2*\cos(x) + 1/2)$

### Sympy [A] (verification not implemented)

Time = 0.09 (sec) , antiderivative size = 15, normalized size of antiderivative = 0.71

$$\int \frac{\sin(x)}{-2 + \cos(x) + \cos^2(x)} dx = -\frac{\log(\cos(x) - 1)}{3} + \frac{\log(\cos(x) + 2)}{3}$$

[In] `integrate(sin(x)/(-2+cos(x)+cos(x)**2),x)`

[Out]  $-\log(\cos(x) - 1)/3 + \log(\cos(x) + 2)/3$

**Maxima [A] (verification not implemented)**

none

Time = 0.22 (sec) , antiderivative size = 15, normalized size of antiderivative = 0.71

$$\int \frac{\sin(x)}{-2 + \cos(x) + \cos^2(x)} dx = \frac{1}{3} \log(\cos(x) + 2) - \frac{1}{3} \log(\cos(x) - 1)$$

[In] integrate(sin(x)/(-2+cos(x)+cos(x)^2),x, algorithm="maxima")

[Out] 1/3\*log(cos(x) + 2) - 1/3\*log(cos(x) - 1)

**Giac [A] (verification not implemented)**

none

Time = 0.30 (sec) , antiderivative size = 17, normalized size of antiderivative = 0.81

$$\int \frac{\sin(x)}{-2 + \cos(x) + \cos^2(x)} dx = \frac{1}{3} \log(\cos(x) + 2) - \frac{1}{3} \log(-\cos(x) + 1)$$

[In] integrate(sin(x)/(-2+cos(x)+cos(x)^2),x, algorithm="giac")

[Out] 1/3\*log(cos(x) + 2) - 1/3\*log(-cos(x) + 1)

**Mupad [B] (verification not implemented)**

Time = 0.20 (sec) , antiderivative size = 9, normalized size of antiderivative = 0.43

$$\int \frac{\sin(x)}{-2 + \cos(x) + \cos^2(x)} dx = \frac{2 \operatorname{atanh}\left(\frac{2 \cos(x)}{3} + \frac{1}{3}\right)}{3}$$

[In] int(sin(x)/(cos(x) + cos(x)^2 - 2),x)

[Out] (2\*atanh((2\*cos(x))/3 + 1/3))/3



### 3.10 $\int \frac{\sin(x)}{4-5\cos(x)+\cos^2(x)} dx$

Optimal result	161
Rubi [A] (verified)	161
Mathematica [A] (verified)	162
Maple [A] (verified)	162
Fricas [A] (verification not implemented)	163
Sympy [A] (verification not implemented)	163
Maxima [A] (verification not implemented)	164
Giac [A] (verification not implemented)	164
Mupad [B] (verification not implemented)	164

#### Optimal result

Integrand size = 15, antiderivative size = 23

$$\int \frac{\sin(x)}{4-5\cos(x)+\cos^2(x)} dx = \frac{1}{3} \log(1-\cos(x)) - \frac{1}{3} \log(4-\cos(x))$$

[Out] 1/3\*ln(1-cos(x))-1/3\*ln(4-cos(x))

#### Rubi [A] (verified)

Time = 0.03 (sec) , antiderivative size = 23, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3,  $\frac{\text{number of rules}}{\text{integrand size}} = 0.200$ , Rules used = {3340, 630, 31}

$$\int \frac{\sin(x)}{4-5\cos(x)+\cos^2(x)} dx = \frac{1}{3} \log(1-\cos(x)) - \frac{1}{3} \log(4-\cos(x))$$

[In] Int[Sin[x]/(4 - 5\*Cos[x] + Cos[x]^2),x]

[Out] Log[1 - Cos[x]]/3 - Log[4 - Cos[x]]/3

#### Rule 31

Int[((a\_) + (b\_.)\*(x\_))^(n\_), x\_Symbol] := Simp[Log[RemoveContent[a + b\*x, x]]/b, x] /; FreeQ[{a, b}, x]

#### Rule 630

Int[((a\_.) + (b\_.)\*(x\_) + (c\_.)\*(x\_)^2)^(n\_), x\_Symbol] := With[{q = Rt[b^2 - 4\*a\*c, 2]}, Dist[c/q, Int[1/Simp[b/2 - q/2 + c\*x, x], x], x] - Dist[c/q, Int[1/Simp[b/2 + q/2 + c\*x, x], x], x] /; FreeQ[{a, b, c}, x] && NeQ[b^2

- 4\*a\*c, 0] && PosQ[b^2 - 4\*a\*c] && PerfectSquareQ[b^2 - 4\*a\*c]

### Rule 3340

```
Int[((a_.) + (b_.)*(cos[(d_.) + (e_.)*(x_)]*(f_.))^(n_.) + (c_.)*(cos[(d_.)
+ (e_.)*(x_)]*(f_.))^(n2_.))^(p_.)*sin[(d_.) + (e_.)*(x_)]^(m_.), x_Symbol
] :> Module[{g = FreeFactors[Cos[d + e*x], x]}, Dist[-g/e, Subst[Int[(1 - g
^2*x^2)^(m - 1)/2*(a + b*(f*g*x)^n + c*(f*g*x)^(2*n))^p, x], x, Cos[d + e
*x]/g], x]] /; FreeQ[{a, b, c, d, e, f, n, p}, x] && EqQ[n2, 2*n] && Intege
rQ[(m - 1)/2]
```

### Rubi steps

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

### Mathematica [A] (verified)

Time = 0.01 (sec) , antiderivative size = 29, normalized size of antiderivative = 1.26

$$\int \frac{\sin(x)}{4 - 5\cos(x) + \cos^2(x)} dx = \frac{2}{3}\log\left(\sin\left(\frac{x}{2}\right)\right) - \frac{1}{3}\log\left(3 + 2\sin^2\left(\frac{x}{2}\right)\right)$$

[In] Integrate[Sin[x]/(4 - 5\*Cos[x] + Cos[x]^2),x]

[Out] (2\*Log[Sin[x/2]])/3 - Log[3 + 2\*Sin[x/2]^2]/3

### Maple [A] (verified)

Time = 0.20 (sec) , antiderivative size = 16, normalized size of antiderivative = 0.70

method	result	size
derivativedivides	$-\frac{\ln(\cos(x)-4)}{3} + \frac{\ln(\cos(x)-1)}{3}$	16
default	$-\frac{\ln(\cos(x)-4)}{3} + \frac{\ln(\cos(x)-1)}{3}$	16
norman	$\frac{2 \ln(\tan(\frac{x}{2}))}{3} - \frac{\ln(5(\tan^2(\frac{x}{2}))+3)}{3}$	22
parallelrisc	$\ln\left(5^{\frac{1}{3}}\left(\tan^2\left(\frac{x}{2}\right)\right)^{\frac{1}{3}}\right) + \ln\left(\frac{1}{(5(\tan^2(\frac{x}{2}))+3)^{\frac{1}{3}}}\right)$	28
risc	$\frac{2 \ln(e^{ix}-1)}{3} - \frac{\ln(e^{2ix}-8e^{ix}+1)}{3}$	29

[In] `int(sin(x)/(4-5*cos(x)+cos(x)^2),x,method=_RETURNVERBOSE)`

[Out] `-1/3*ln(cos(x)-4)+1/3*ln(cos(x)-1)`

### Fricas [A] (verification not implemented)

none

Time = 0.24 (sec) , antiderivative size = 19, normalized size of antiderivative = 0.83

$$\int \frac{\sin(x)}{4 - 5 \cos(x) + \cos^2(x)} dx = \frac{1}{3} \log\left(-\frac{1}{2} \cos(x) + \frac{1}{2}\right) - \frac{1}{3} \log(-\cos(x) + 4)$$

[In] `integrate(sin(x)/(4-5*cos(x)+cos(x)^2),x, algorithm="fricas")`

[Out] `1/3*log(-1/2*cos(x) + 1/2) - 1/3*log(-cos(x) + 4)`

### Sympy [A] (verification not implemented)

Time = 0.10 (sec) , antiderivative size = 15, normalized size of antiderivative = 0.65

$$\int \frac{\sin(x)}{4 - 5 \cos(x) + \cos^2(x)} dx = -\frac{\log(\cos(x) - 4)}{3} + \frac{\log(\cos(x) - 1)}{3}$$

[In] `integrate(sin(x)/(4-5*cos(x)+cos(x)**2),x)`

[Out] `-log(cos(x) - 4)/3 + log(cos(x) - 1)/3`

**Maxima [A] (verification not implemented)**

none

Time = 0.30 (sec) , antiderivative size = 15, normalized size of antiderivative = 0.65

$$\int \frac{\sin(x)}{4 - 5 \cos(x) + \cos^2(x)} dx = \frac{1}{3} \log(\cos(x) - 1) - \frac{1}{3} \log(\cos(x) - 4)$$

[In] integrate(sin(x)/(4-5\*cos(x)+cos(x)^2),x, algorithm="maxima")

[Out] 1/3\*log(cos(x) - 1) - 1/3\*log(cos(x) - 4)

**Giac [A] (verification not implemented)**

none

Time = 0.29 (sec) , antiderivative size = 19, normalized size of antiderivative = 0.83

$$\int \frac{\sin(x)}{4 - 5 \cos(x) + \cos^2(x)} dx = -\frac{1}{3} \log(-\cos(x) + 4) + \frac{1}{3} \log(-\cos(x) + 1)$$

[In] integrate(sin(x)/(4-5\*cos(x)+cos(x)^2),x, algorithm="giac")

[Out] -1/3\*log(-cos(x) + 4) + 1/3\*log(-cos(x) + 1)

**Mupad [B] (verification not implemented)**

Time = 0.14 (sec) , antiderivative size = 9, normalized size of antiderivative = 0.39

$$\int \frac{\sin(x)}{4 - 5 \cos(x) + \cos^2(x)} dx = \frac{2 \operatorname{atanh}\left(\frac{2 \cos(x)}{3} - \frac{5}{3}\right)}{3}$$

[In] int(sin(x)/(cos(x)^2 - 5\*cos(x) + 4),x)

[Out] (2\*atanh((2\*cos(x))/3 - 5/3))/3

### 3.11 $\int \frac{\sin(x)}{3-2\cos(x)+\cos^2(x)} dx$

Optimal result . . . . .	165
Rubi [A] (verified) . . . . .	165
Mathematica [A] (verified) . . . . .	166
Maple [A] (verified) . . . . .	166
Fricas [A] (verification not implemented) . . . . .	167
Sympy [A] (verification not implemented) . . . . .	167
Maxima [A] (verification not implemented) . . . . .	167
Giac [A] (verification not implemented) . . . . .	168
Mupad [B] (verification not implemented) . . . . .	168

#### Optimal result

Integrand size = 15, antiderivative size = 19

$$\int \frac{\sin(x)}{3-2\cos(x)+\cos^2(x)} dx = \frac{\arctan\left(\frac{1-\cos(x)}{\sqrt{2}}\right)}{\sqrt{2}}$$

[Out] 1/2\*arctan(1/2\*(1-cos(x))\*2^(1/2))\*2^(1/2)

#### Rubi [A] (verified)

Time = 0.04 (sec) , antiderivative size = 19, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3,  $\frac{\text{number of rules}}{\text{integrand size}} = 0.200$ , Rules used = {3340, 632, 210}

$$\int \frac{\sin(x)}{3-2\cos(x)+\cos^2(x)} dx = \frac{\arctan\left(\frac{1-\cos(x)}{\sqrt{2}}\right)}{\sqrt{2}}$$

[In] Int[Sin[x]/(3 - 2\*Cos[x] + Cos[x]^2), x]

[Out] ArcTan[(1 - Cos[x])/Sqrt[2]]/Sqrt[2]

#### Rule 210

Int[((a\_) + (b\_.)\*(x\_)^2)^(-1), x\_Symbol] := Simp[(-(Rt[-a, 2]\*Rt[-b, 2])^(-1))\*ArcTan[Rt[-b, 2]\*(x/Rt[-a, 2])], x] /; FreeQ[{a, b}, x] && PosQ[a/b] & & (LtQ[a, 0] || LtQ[b, 0])

#### Rule 632

Int[((a\_.) + (b\_.)\*(x\_) + (c\_.)\*(x\_)^2)^(-1), x\_Symbol] := Dist[-2, Subst[Int[1/Simp[b^2 - 4\*a\*c - x^2, x], x], x, b + 2\*c\*x], x] /; FreeQ[{a, b, c},

`x] && NeQ[b^2 - 4*a*c, 0]`

### Rule 3340

```
Int[((a_.) + (b_.)*(cos[(d_.) + (e_.)*(x_)])*(f_.))^(n_.) + (c_.)*(cos[(d_.)
+ (e_.)*(x_)])*(f_.))^(n2_.))^(p_.)*sin[(d_.) + (e_.)*(x_)^(m_.), x_Symbol
] :> Module[{g = FreeFactors[Cos[d + e*x], x]}, Dist[-g/e, Subst[Int[(1 - g
^2*x^2)^(m - 1)/2]*(a + b*(f*g*x)^n + c*(f*g*x)^(2*n))^p, x], x, Cos[d + e
*x]/g], x]] /; FreeQ[{a, b, c, d, e, f, n, p}, x] && EqQ[n2, 2*n] && Intege
rQ[(m - 1)/2]
```

### Rubi steps

$$\begin{aligned} \text{integral} &= -\text{Subst}\left(\int \frac{1}{3 - 2x + x^2} dx, x, \cos(x)\right) \\ &= 2\text{Subst}\left(\int \frac{1}{-8 - x^2} dx, x, -2 + 2\cos(x)\right) \\ &= \frac{\arctan\left(\frac{1 - \cos(x)}{\sqrt{2}}\right)}{\sqrt{2}} \end{aligned}$$

### Mathematica [A] (verified)

Time = 0.05 (sec) , antiderivative size = 18, normalized size of antiderivative = 0.95

$$\int \frac{\sin(x)}{3 - 2\cos(x) + \cos^2(x)} dx = -\frac{\arctan\left(\frac{-1 + \cos(x)}{\sqrt{2}}\right)}{\sqrt{2}}$$

[In] Integrate[Sin[x]/(3 - 2\*Cos[x] + Cos[x]^2),x]

[Out] -(ArcTan[(-1 + Cos[x])/Sqrt[2]]/Sqrt[2])

### Maple [A] (verified)

Time = 0.16 (sec) , antiderivative size = 18, normalized size of antiderivative = 0.95

method	result	size
derivativedivides	$-\frac{\sqrt{2} \arctan\left(\frac{(2\cos(x)-2)\sqrt{2}}{4}\right)}{2}$	18
default	$-\frac{\sqrt{2} \arctan\left(\frac{(2\cos(x)-2)\sqrt{2}}{4}\right)}{2}$	18
risch	$-\frac{i\sqrt{2} \ln\left(e^{2ix} + (2i\sqrt{2}-2)e^{ix} + 1\right)}{4} + \frac{i\sqrt{2} \ln\left(e^{2ix} + (-2i\sqrt{2}-2)e^{ix} + 1\right)}{4}$	58

[In] `int(sin(x)/(3-2*cos(x)+cos(x)^2),x,method=_RETURNVERBOSE)`

[Out] `-1/2*2^(1/2)*arctan(1/4*(2*cos(x)-2)*2^(1/2))`

### **Fricas [A] (verification not implemented)**

none

Time = 0.24 (sec) , antiderivative size = 19, normalized size of antiderivative = 1.00

$$\int \frac{\sin(x)}{3 - 2 \cos(x) + \cos^2(x)} dx = -\frac{1}{2} \sqrt{2} \arctan \left( \frac{1}{2} \sqrt{2} \cos(x) - \frac{1}{2} \sqrt{2} \right)$$

[In] `integrate(sin(x)/(3-2*cos(x)+cos(x)^2),x, algorithm="fricas")`

[Out] `-1/2*sqrt(2)*arctan(1/2*sqrt(2)*cos(x) - 1/2*sqrt(2))`

### **Sympy [A] (verification not implemented)**

Time = 0.15 (sec) , antiderivative size = 26, normalized size of antiderivative = 1.37

$$\int \frac{\sin(x)}{3 - 2 \cos(x) + \cos^2(x)} dx = -\frac{\sqrt{2} \operatorname{atan} \left( \frac{\sqrt{2} \cos(x)}{2} - \frac{\sqrt{2}}{2} \right)}{2}$$

[In] `integrate(sin(x)/(3-2*cos(x)+cos(x)**2),x)`

[Out] `-sqrt(2)*atan(sqrt(2)*cos(x)/2 - sqrt(2)/2)/2`

### **Maxima [A] (verification not implemented)**

none

Time = 0.38 (sec) , antiderivative size = 15, normalized size of antiderivative = 0.79

$$\int \frac{\sin(x)}{3 - 2 \cos(x) + \cos^2(x)} dx = -\frac{1}{2} \sqrt{2} \arctan \left( \frac{1}{2} \sqrt{2} (\cos(x) - 1) \right)$$

[In] `integrate(sin(x)/(3-2*cos(x)+cos(x)^2),x, algorithm="maxima")`

[Out] `-1/2*sqrt(2)*arctan(1/2*sqrt(2)*(cos(x) - 1))`

**Giac [A] (verification not implemented)**

none

Time = 0.29 (sec) , antiderivative size = 15, normalized size of antiderivative = 0.79

$$\int \frac{\sin(x)}{3 - 2 \cos(x) + \cos^2(x)} dx = -\frac{1}{2} \sqrt{2} \arctan \left( \frac{1}{2} \sqrt{2} (\cos(x) - 1) \right)$$

[In] integrate(sin(x)/(3-2\*cos(x)+cos(x)^2),x, algorithm="giac")

[Out] -1/2\*sqrt(2)\*arctan(1/2\*sqrt(2)\*(cos(x) - 1))

**Mupad [B] (verification not implemented)**

Time = 0.07 (sec) , antiderivative size = 15, normalized size of antiderivative = 0.79

$$\int \frac{\sin(x)}{3 - 2 \cos(x) + \cos^2(x)} dx = -\frac{\sqrt{2} \operatorname{atan} \left( \frac{\sqrt{2} (\cos(x) - 1)}{2} \right)}{2}$$

[In] int(sin(x)/(cos(x)^2 - 2\*cos(x) + 3),x)

[Out] -(2^(1/2)\*atan((2^(1/2)\*(cos(x) - 1))/2))/2



$$3.12 \quad \int \frac{\sin(x)}{(13-4\cos(x)+\cos^2(x))^2} dx$$

Optimal result	169
Rubi [A] (verified)	169
Mathematica [A] (verified)	170
Maple [A] (verified)	171
Fricas [A] (verification not implemented)	171
Sympy [B] (verification not implemented)	172
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Giac [A] (verification not implemented)	173
Mupad [B] (verification not implemented)	173

### Optimal result

Integrand size = 15, antiderivative size = 36

$$\int \frac{\sin(x)}{(13-4\cos(x)+\cos^2(x))^2} dx = -\frac{1}{54} \arctan\left(\frac{1}{3}(-2+\cos(x))\right) + \frac{2-\cos(x)}{18(13-4\cos(x)+\cos^2(x))}$$

[Out]  $-1/54*\arctan(-2/3+1/3*\cos(x))+1/18*(2-\cos(x))/(13-4*\cos(x)+\cos(x)^2)$

### Rubi [A] (verified)

Time = 0.04 (sec) , antiderivative size = 36, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4,  $\frac{\text{number of rules}}{\text{integrand size}} = 0.267$ , Rules used = {3340, 628, 632, 210}

$$\int \frac{\sin(x)}{(13-4\cos(x)+\cos^2(x))^2} dx = \frac{2-\cos(x)}{18(\cos^2(x)-4\cos(x)+13)} - \frac{1}{54} \arctan\left(\frac{1}{3}(\cos(x)-2)\right)$$

[In]  $\text{Int}[\text{Sin}[x]/(13-4*\text{Cos}[x]+\text{Cos}[x]^2)^2, x]$

[Out]  $-1/54*\text{ArcTan}[(-2+\text{Cos}[x])/3]+(2-\text{Cos}[x])/(18*(13-4*\text{Cos}[x]+\text{Cos}[x]^2))$

### Rule 210

$\text{Int}[(a_+ + (b_+)*(x_+)^2)^{-1}, x\_Symbol] \rightarrow \text{Simp}[(-\text{Rt}[-a, 2]*\text{Rt}[-b, 2])^{-1})*\text{ArcTan}[\text{Rt}[-b, 2]*(x/\text{Rt}[-a, 2])], x] /; \text{FreeQ}\{a, b, x\} \&\& \text{PosQ}[a/b] \& \& (\text{LtQ}[a, 0] \parallel \text{LtQ}[b, 0])$

## Rule 628

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] := Simp[(b + 2*c*x)
*((a + b*x + c*x^2)^(p + 1)/((p + 1)*(b^2 - 4*a*c))), x] - Dist[2*c*((2*p +
3)/((p + 1)*(b^2 - 4*a*c))), Int[(a + b*x + c*x^2)^(p + 1), x], x] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0] && LtQ[p, -1] && NeQ[p, -3/2] && Int
egerQ[4*p]
```

## Rule 632

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] := Dist[-2, Subst[In
t[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

## Rule 3340

```
Int[((a_.) + (b_.)*(cos[(d_.) + (e_.)*(x_)])*(f_.))^(n_.) + (c_.)*(cos[(d_.)
+ (e_.)*(x_)])*(f_.))^(n2_.))^(p_.)*sin[(d_.) + (e_.)*(x_)]^(m_.), x_Symbol
] := Module[{g = FreeFactors[Cos[d + e*x], x]}, Dist[-g/e, Subst[Int[(1 - g
^2*x^2)^(m - 1)/2*(a + b*(f*g*x)^n + c*(f*g*x)^(2*n))^p, x], x, Cos[d + e
*x]/g], x] /; FreeQ[{a, b, c, d, e, f, n, p}, x] && EqQ[n2, 2*n] && Intege
rQ[(m - 1)/2]
```

## Rubi steps

$$\begin{aligned}
\text{integral} &= -\text{Subst}\left(\int \frac{1}{(13 - 4x + x^2)^2} dx, x, \cos(x)\right) \\
&= \frac{2 - \cos(x)}{18(13 - 4\cos(x) + \cos^2(x))} - \frac{1}{18}\text{Subst}\left(\int \frac{1}{13 - 4x + x^2} dx, x, \cos(x)\right) \\
&= \frac{2 - \cos(x)}{18(13 - 4\cos(x) + \cos^2(x))} + \frac{1}{9}\text{Subst}\left(\int \frac{1}{-36 - x^2} dx, x, -4 + 2\cos(x)\right) \\
&= -\frac{1}{54}\arctan\left(\frac{1}{3}(-2 + \cos(x))\right) + \frac{2 - \cos(x)}{18(13 - 4\cos(x) + \cos^2(x))}
\end{aligned}$$

## Mathematica [A] (verified)

Time = 0.09 (sec) , antiderivative size = 34, normalized size of antiderivative = 0.94

$$\int \frac{\sin(x)}{(13 - 4\cos(x) + \cos^2(x))^2} dx = -\frac{1}{54}\arctan\left(\frac{1}{3}(-2 + \cos(x))\right) - \frac{-2 + \cos(x)}{18(13 - 4\cos(x) + \cos^2(x))}$$

[In] Integrate[Sin[x]/(13 - 4\*Cos[x] + Cos[x]^2)^2,x]

[Out] -1/54\*ArcTan[(-2 + Cos[x])/3] - (-2 + Cos[x])/(18\*(13 - 4\*Cos[x] + Cos[x]^2))

### Maple [A] (verified)

Time = 0.76 (sec) , antiderivative size = 31, normalized size of antiderivative = 0.86

method	result
derivativedivides	$-\frac{2 \cos(x)-4}{36(13-4 \cos(x)+\cos^2(x))} - \frac{\arctan\left(-\frac{2}{3}+\frac{\cos(x)}{3}\right)}{54}$
default	$-\frac{2 \cos(x)-4}{36(13-4 \cos(x)+\cos^2(x))} - \frac{\arctan\left(-\frac{2}{3}+\frac{\cos(x)}{3}\right)}{54}$
risch	$-\frac{e^{3ix}-4e^{2ix}+e^{ix}}{9(e^{4ix}-8e^{3ix}+54e^{2ix}-8e^{ix}+1)} + \frac{i \ln(e^{2ix}+(-4-6i)e^{ix}+1)}{108} - \frac{i \ln(e^{2ix}+(-4+6i)e^{ix}+1)}{108}$
parallelrisc	$\frac{-2+i(-9(\tan^4(\frac{x}{2}))-12(\tan^2(\frac{x}{2}))-5) \ln(3(\tan^2(\frac{x}{2}))+2-i)+i(9(\tan^4(\frac{x}{2}))+12(\tan^2(\frac{x}{2}))+5) \ln(3(\tan^2(\frac{x}{2}))+2+i)}{972(\tan^4(\frac{x}{2}))+1296(\tan^2(\frac{x}{2}))+540}$

[In] int(sin(x)/(13-4\*cos(x)+cos(x)^2)^2,x,method=\_RETURNVERBOSE)

[Out] -1/36\*(2\*cos(x)-4)/(13-4\*cos(x)+cos(x)^2)-1/54\*arctan(-2/3+1/3\*cos(x))

### Fricas [A] (verification not implemented)

none

Time = 0.25 (sec) , antiderivative size = 38, normalized size of antiderivative = 1.06

$$\int \frac{\sin(x)}{(13 - 4 \cos(x) + \cos^2(x))^2} dx$$

$$= -\frac{(\cos(x)^2 - 4 \cos(x) + 13) \arctan\left(\frac{1}{3} \cos(x) - \frac{2}{3}\right) + 3 \cos(x) - 6}{54 (\cos(x)^2 - 4 \cos(x) + 13)}$$

[In] integrate(sin(x)/(13-4\*cos(x)+cos(x)^2)^2,x, algorithm="fricas")

[Out] -1/54\*((cos(x)^2 - 4\*cos(x) + 13)\*arctan(1/3\*cos(x) - 2/3) + 3\*cos(x) - 6)/(cos(x)^2 - 4\*cos(x) + 13)

**Sympy [B] (verification not implemented)**

Leaf count of result is larger than twice the leaf count of optimal. 116 vs.  $2(31) = 62$ .

Time = 0.47 (sec) , antiderivative size = 116, normalized size of antiderivative = 3.22

$$\int \frac{\sin(x)}{(13 - 4 \cos(x) + \cos^2(x))^2} dx = -\frac{\cos^2(x) \operatorname{atan}\left(\frac{\cos(x)}{3} - \frac{2}{3}\right)}{54 \cos^2(x) - 216 \cos(x) + 702} + \frac{4 \cos(x) \operatorname{atan}\left(\frac{\cos(x)}{3} - \frac{2}{3}\right)}{54 \cos^2(x) - 216 \cos(x) + 702} - \frac{3 \cos(x)}{54 \cos^2(x) - 216 \cos(x) + 702} - \frac{13 \operatorname{atan}\left(\frac{\cos(x)}{3} - \frac{2}{3}\right)}{54 \cos^2(x) - 216 \cos(x) + 702} + \frac{6}{54 \cos^2(x) - 216 \cos(x) + 702}$$

[In] integrate(sin(x)/(13-4\*cos(x)+cos(x)\*\*2)\*\*2,x)

[Out] -cos(x)\*\*2\*atan(cos(x)/3 - 2/3)/(54\*cos(x)\*\*2 - 216\*cos(x) + 702) + 4\*cos(x)\*atan(cos(x)/3 - 2/3)/(54\*cos(x)\*\*2 - 216\*cos(x) + 702) - 3\*cos(x)/(54\*cos(x)\*\*2 - 216\*cos(x) + 702) - 13\*atan(cos(x)/3 - 2/3)/(54\*cos(x)\*\*2 - 216\*cos(x) + 702) + 6/(54\*cos(x)\*\*2 - 216\*cos(x) + 702)

**Maxima [A] (verification not implemented)**

none

Time = 0.69 (sec) , antiderivative size = 28, normalized size of antiderivative = 0.78

$$\int \frac{\sin(x)}{(13 - 4 \cos(x) + \cos^2(x))^2} dx = -\frac{\cos(x) - 2}{18 (\cos(x)^2 - 4 \cos(x) + 13)} - \frac{1}{54} \arctan\left(\frac{1}{3} \cos(x) - \frac{2}{3}\right)$$

[In] integrate(sin(x)/(13-4\*cos(x)+cos(x)^2)^2,x, algorithm="maxima")

[Out] -1/18\*(cos(x) - 2)/(cos(x)^2 - 4\*cos(x) + 13) - 1/54\*arctan(1/3\*cos(x) - 2/3)

**Giac [A] (verification not implemented)**

none

Time = 0.32 (sec) , antiderivative size = 28, normalized size of antiderivative = 0.78

$$\int \frac{\sin(x)}{(13 - 4 \cos(x) + \cos^2(x))^2} dx = -\frac{\cos(x) - 2}{18 (\cos(x)^2 - 4 \cos(x) + 13)} - \frac{1}{54} \arctan\left(\frac{1}{3} \cos(x) - \frac{2}{3}\right)$$

[In] integrate(sin(x)/(13-4\*cos(x)+cos(x)^2)^2,x, algorithm="giac")

[Out] -1/18\*(cos(x) - 2)/(cos(x)^2 - 4\*cos(x) + 13) - 1/54\*arctan(1/3\*cos(x) - 2/3)

**Mupad [B] (verification not implemented)**

Time = 0.08 (sec) , antiderivative size = 30, normalized size of antiderivative = 0.83

$$\int \frac{\sin(x)}{(13 - 4 \cos(x) + \cos^2(x))^2} dx = -\frac{\operatorname{atan}\left(\frac{\cos(x)}{3} - \frac{2}{3}\right)}{54} - \frac{\frac{\cos(x)}{18} - \frac{1}{9}}{\cos(x)^2 - 4 \cos(x) + 13}$$

[In] int(sin(x)/(cos(x)^2 - 4\*cos(x) + 13)^2,x)

[Out] - atan(cos(x)/3 - 2/3)/54 - (cos(x)/18 - 1/9)/(cos(x)^2 - 4\*cos(x) + 13)

### 3.13 $\int \frac{\cos^4(x)}{a+b \cos(x)+c \cos^2(x)} dx$

Optimal result	174
Rubi [A] (verified)	175
Mathematica [A] (verified)	177
Maple [A] (verified)	178
Fricas [B] (verification not implemented)	178
Sympy [F(-1)]	179
Maxima [F]	179
Giac [B] (verification not implemented)	180
Mupad [B] (verification not implemented)	186

#### Optimal result

Integrand size = 19, antiderivative size = 326

$$\int \frac{\cos^4(x)}{a+b \cos(x)+c \cos^2(x)} dx$$

$$= \frac{x}{2c} + \frac{(b^2 - ac)x}{c^3} - \frac{2\left(b^3 - 2abc - \frac{b^4 - 4ab^2c + 2a^2c^2}{\sqrt{b^2 - 4ac}}\right) \arctan\left(\frac{\sqrt{b-2c-\sqrt{b^2-4ac}}\tan\left(\frac{x}{2}\right)}{\sqrt{b+2c-\sqrt{b^2-4ac}}}\right)}{c^3\sqrt{b-2c-\sqrt{b^2-4ac}}\sqrt{b+2c-\sqrt{b^2-4ac}}}$$

$$- \frac{2\left(b^3 - 2abc + \frac{b^4 - 4ab^2c + 2a^2c^2}{\sqrt{b^2 - 4ac}}\right) \arctan\left(\frac{\sqrt{b-2c+\sqrt{b^2-4ac}}\tan\left(\frac{x}{2}\right)}{\sqrt{b+2c+\sqrt{b^2-4ac}}}\right)}{c^3\sqrt{b-2c+\sqrt{b^2-4ac}}\sqrt{b+2c+\sqrt{b^2-4ac}}} - \frac{b \sin(x)}{c^2} + \frac{\cos(x) \sin(x)}{2c}$$

[Out] 1/2\*x/c+(-a\*c+b^2)\*x/c^3-b\*sin(x)/c^2+1/2\*cos(x)\*sin(x)/c-2\*arctan((b-2\*c-(-4\*a\*c+b^2)^(1/2))^(1/2)\*tan(1/2\*x)/(b+2\*c-(-4\*a\*c+b^2)^(1/2))^(1/2))\*(b^3-2\*a\*b\*c+(-2\*a^2\*c^2+4\*a\*b^2\*c-b^4)/(-4\*a\*c+b^2)^(1/2))/c^3/(b-2\*c-(-4\*a\*c+b^2)^(1/2))^(1/2)/(b+2\*c-(-4\*a\*c+b^2)^(1/2))^(1/2)-2\*arctan((b-2\*c+(-4\*a\*c+b^2)^(1/2))^(1/2)\*tan(1/2\*x)/(b+2\*c+(-4\*a\*c+b^2)^(1/2))^(1/2))\*(b^3-2\*a\*b\*c+(2\*a^2\*c^2-4\*a\*b^2\*c+b^4)/(-4\*a\*c+b^2)^(1/2))/c^3/(b-2\*c+(-4\*a\*c+b^2)^(1/2))^(1/2)/(b+2\*c+(-4\*a\*c+b^2)^(1/2))^(1/2)

**Rubi [A] (verified)**

Time = 4.62 (sec) , antiderivative size = 326, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 7,  $\frac{\text{number of rules}}{\text{integrand size}} = 0.368$ , Rules used = {3338, 2717, 2715, 8, 3374, 2738, 211}

$$\int \frac{\cos^4(x)}{a + b \cos(x) + c \cos^2(x)} dx$$

$$= -\frac{2\left(-\frac{2a^2c^2-4ab^2c+b^4}{\sqrt{b^2-4ac}} - 2abc + b^3\right) \arctan\left(\frac{\tan\left(\frac{x}{2}\right)\sqrt{-\sqrt{b^2-4ac}+b-2c}}{\sqrt{-\sqrt{b^2-4ac}+b+2c}}\right)}{c^3\sqrt{-\sqrt{b^2-4ac}+b-2c}\sqrt{-\sqrt{b^2-4ac}+b+2c}}$$

$$-\frac{2\left(\frac{2a^2c^2-4ab^2c+b^4}{\sqrt{b^2-4ac}} - 2abc + b^3\right) \arctan\left(\frac{\tan\left(\frac{x}{2}\right)\sqrt{\sqrt{b^2-4ac}+b-2c}}{\sqrt{\sqrt{b^2-4ac}+b+2c}}\right)}{c^3\sqrt{\sqrt{b^2-4ac}+b-2c}\sqrt{\sqrt{b^2-4ac}+b+2c}}$$

$$+ \frac{x(b^2-ac)}{c^3} - \frac{b \sin(x)}{c^2} + \frac{x}{2c} + \frac{\sin(x) \cos(x)}{2c}$$

[In] Int[Cos[x]^4/(a + b\*Cos[x] + c\*Cos[x]^2), x]

[Out] x/(2\*c) + ((b^2 - a\*c)\*x)/c^3 - (2\*(b^3 - 2\*a\*b\*c - (b^4 - 4\*a\*b^2\*c + 2\*a^2\*c^2)/Sqrt[b^2 - 4\*a\*c])\*ArcTan[(Sqrt[b - 2\*c - Sqrt[b^2 - 4\*a\*c]]\*Tan[x/2])/Sqrt[b + 2\*c - Sqrt[b^2 - 4\*a\*c]])/(c^3\*Sqrt[b - 2\*c - Sqrt[b^2 - 4\*a\*c]])\*Sqrt[b + 2\*c - Sqrt[b^2 - 4\*a\*c]]) - (2\*(b^3 - 2\*a\*b\*c + (b^4 - 4\*a\*b^2\*c + 2\*a^2\*c^2)/Sqrt[b^2 - 4\*a\*c])\*ArcTan[(Sqrt[b - 2\*c + Sqrt[b^2 - 4\*a\*c]]\*Tan[x/2])/Sqrt[b + 2\*c + Sqrt[b^2 - 4\*a\*c]])/(c^3\*Sqrt[b - 2\*c + Sqrt[b^2 - 4\*a\*c]])\*Sqrt[b + 2\*c + Sqrt[b^2 - 4\*a\*c]]) - (b\*SIn[x])/c^2 + (Cos[x]\*Sin[x])/(2\*c)

Rule 8

Int[a\_, x\_Symbol] := Simp[a\*x, x] /; FreeQ[a, x]

Rule 211

Int[((a\_) + (b\_.)\*(x\_)^2)^(-1), x\_Symbol] := Simp[(Rt[a/b, 2]/a)\*ArcTan[x/Rt[a/b, 2]], x] /; FreeQ[{a, b}, x] && PosQ[a/b]

Rule 2715

Int[((b\_.)\*sin[(c\_.) + (d\_.)\*(x\_)])^(n\_), x\_Symbol] := Simp[(-b)\*Cos[c + d\*x]\*((b\*SIn[c + d\*x])^(n - 1)/(d\*n), x] + Dist[b^2\*((n - 1)/n), Int[(b\*SIn[c + d\*x])^(n - 2), x], x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1] && IntegerQ[2\*n]

Rule 2717

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

### Rule 2738

```
Int[((a_) + (b_.)*sin[Pi/2 + (c_.) + (d_.)*(x_)])^(-1), x_Symbol] := With[{
e = FreeFactors[Tan[(c + d*x)/2], x]}, Dist[2*(e/d), Subst[Int[1/(a + b + (
a - b)*e^2*x^2), x], x, Tan[(c + d*x)/2]/e], x]] /; FreeQ[{a, b, c, d}, x]
&& NeQ[a^2 - b^2, 0]
```

### Rule 3338

```
Int[cos[(d_.) + (e_.)*(x_)]^(m_.)*((a_.) + cos[(d_.) + (e_.)*(x_)]^(n_.)*(b
_.) + cos[(d_.) + (e_.)*(x_)]^(n2_.)*(c_.))^p, x_Symbol] := Int[ExpandTr
ig[cos[d + e*x]^m*(a + b*cos[d + e*x]^n + c*cos[d + e*x]^(2*n))^p, x] /;
FreeQ[{a, b, c, d, e}, x] && EqQ[n2, 2*n] && NeQ[b^2 - 4*a*c, 0] && Integ
ersQ[m, n, p]
```

### Rule 3374

```
Int[(cos[(d_.) + (e_.)*(x_)]*(B_.) + (A_))/((a_.) + cos[(d_.) + (e_.)*(x_)]
*(b_.) + cos[(d_.) + (e_.)*(x_)]^2*(c_.)), x_Symbol] := Module[{q = Rt[b^2
- 4*a*c, 2]}, Dist[B + (b*B - 2*A*c)/q, Int[1/(b + q + 2*c*Cos[d + e*x]), x
], x] + Dist[B - (b*B - 2*A*c)/q, Int[1/(b - q + 2*c*Cos[d + e*x]), x], x]]
/; FreeQ[{a, b, c, d, e, A, B}, x] && NeQ[b^2 - 4*a*c, 0]
```

### Rubi steps

$$\begin{aligned}
\text{integral} &= \int \left( \frac{b^2 - ac}{c^3} - \frac{b \cos(x)}{c^2} + \frac{\cos^2(x)}{c} + \frac{-ab^2 \left(1 - \frac{ac}{b^2}\right) - b^3 \left(1 - \frac{2ac}{b^2}\right) \cos(x)}{c^3 (a + b \cos(x) + c \cos^2(x))} \right) dx \\
&= \frac{(b^2 - ac)x}{c^3} + \frac{\int \frac{-ab^2 \left(1 - \frac{ac}{b^2}\right) - b^3 \left(1 - \frac{2ac}{b^2}\right) \cos(x)}{a + b \cos(x) + c \cos^2(x)} dx}{c^3} - \frac{b \int \cos(x) dx}{c^2} + \frac{\int \cos^2(x) dx}{c} \\
&= \frac{(b^2 - ac)x}{c^3} - \frac{b \sin(x)}{c^2} + \frac{\cos(x) \sin(x)}{2c} + \frac{\int 1 dx}{2c} \\
&\quad - \frac{\left(b^3 - 2abc - \frac{b^4 - 4ab^2c + 2a^2c^2}{\sqrt{b^2 - 4ac}}\right) \int \frac{1}{b - \sqrt{b^2 - 4ac} + 2c \cos(x)} dx}{c^3} \\
&\quad - \frac{\left(b^3 - 2abc + \frac{b^4 - 4ab^2c + 2a^2c^2}{\sqrt{b^2 - 4ac}}\right) \int \frac{1}{b + \sqrt{b^2 - 4ac} + 2c \cos(x)} dx}{c^3}
\end{aligned}$$



$$\begin{aligned}
&= \frac{x}{2c} + \frac{(b^2 - ac)x}{c^3} - \frac{b \sin(x)}{c^2} + \frac{\cos(x) \sin(x)}{2c} \\
&\quad \frac{\left(2\left(b^3 - 2abc - \frac{b^4 - 4ab^2c + 2a^2c^2}{\sqrt{b^2 - 4ac}}\right)\right) \text{Subst}\left(\int \frac{1}{b+2c-\sqrt{b^2-4ac}+(b-2c-\sqrt{b^2-4ac})x^2} dx, x, \tan\left(\frac{x}{2}\right)\right)}{c^3} \\
&\quad - \frac{\left(2\left(b^3 - 2abc + \frac{b^4 - 4ab^2c + 2a^2c^2}{\sqrt{b^2 - 4ac}}\right)\right) \text{Subst}\left(\int \frac{1}{b+2c+\sqrt{b^2-4ac}+(b-2c+\sqrt{b^2-4ac})x^2} dx, x, \tan\left(\frac{x}{2}\right)\right)}{c^3} \\
&= \frac{x}{2c} + \frac{(b^2 - ac)x}{c^3} - \frac{2\left(b^3 - 2abc - \frac{b^4 - 4ab^2c + 2a^2c^2}{\sqrt{b^2 - 4ac}}\right) \arctan\left(\frac{\sqrt{b-2c-\sqrt{b^2-4ac}} \tan\left(\frac{x}{2}\right)}{\sqrt{b+2c-\sqrt{b^2-4ac}}}\right)}{c^3 \sqrt{b-2c-\sqrt{b^2-4ac}} \sqrt{b+2c-\sqrt{b^2-4ac}}} \\
&\quad - \frac{2\left(b^3 - 2abc + \frac{b^4 - 4ab^2c + 2a^2c^2}{\sqrt{b^2 - 4ac}}\right) \arctan\left(\frac{\sqrt{b-2c+\sqrt{b^2-4ac}} \tan\left(\frac{x}{2}\right)}{\sqrt{b+2c+\sqrt{b^2-4ac}}}\right)}{c^3 \sqrt{b-2c+\sqrt{b^2-4ac}} \sqrt{b+2c+\sqrt{b^2-4ac}}} - \frac{b \sin(x)}{c^2} \\
&\quad + \frac{\cos(x) \sin(x)}{2c}
\end{aligned}$$

### Mathematica [A] (verified)

Time = 0.60 (sec) , antiderivative size = 356, normalized size of antiderivative = 1.09

$$\int \frac{\cos^4(x)}{a + b \cos(x) + c \cos^2(x)} dx$$

$$= \frac{4b^2x + 2c(-2a + c)x + \frac{4\sqrt{2}(b^4 - 4ab^2c + 2a^2c^2 + b^3\sqrt{b^2 - 4ac} - 2abc\sqrt{b^2 - 4ac}) \operatorname{arctanh}\left(\frac{(b - 2c + \sqrt{b^2 - 4ac}) \tan\left(\frac{x}{2}\right)}{\sqrt{-2b^2 + 4c(a+c) - 2b\sqrt{b^2 - 4ac}}}\right)}{\sqrt{b^2 - 4ac} \sqrt{-b^2 + 2c(a+c) - b\sqrt{b^2 - 4ac}}}}{4c^3}$$

[In] Integrate[Cos[x]^4/(a + b\*Cos[x] + c\*Cos[x]^2), x]

[Out] (4\*b^2\*x + 2\*c\*(-2\*a + c)\*x + (4\*Sqrt[2]\*(b^4 - 4\*a\*b^2\*c + 2\*a^2\*c^2 + b^3\*Sqrt[b^2 - 4\*a\*c] - 2\*a\*b\*c\*Sqrt[b^2 - 4\*a\*c])\*ArcTanh[((b - 2\*c + Sqrt[b^2 - 4\*a\*c])\*Tan[x/2])/Sqrt[-2\*b^2 + 4\*c\*(a + c) - 2\*b\*Sqrt[b^2 - 4\*a\*c]]])/(Sqrt[b^2 - 4\*a\*c]\*Sqrt[-b^2 + 2\*c\*(a + c) - b\*Sqrt[b^2 - 4\*a\*c]]) - (4\*Sqrt[2]\*(-b^4 + 4\*a\*b^2\*c - 2\*a^2\*c^2 + b^3\*Sqrt[b^2 - 4\*a\*c] - 2\*a\*b\*c\*Sqrt[b^2 - 4\*a\*c])\*ArcTanh[(-b + 2\*c + Sqrt[b^2 - 4\*a\*c])\*Tan[x/2])/Sqrt[-2\*b^2 + 4\*c\*(a + c) + 2\*b\*Sqrt[b^2 - 4\*a\*c]])/(Sqrt[b^2 - 4\*a\*c]\*Sqrt[-b^2 + 2\*c\*(a + c) + b\*Sqrt[b^2 - 4\*a\*c]]) - 4\*b\*c\*Sin[x] + c^2\*Sin[2\*x])/(4\*c^3)

**Maple [A] (verified)**

Time = 4.72 (sec) , antiderivative size = 431, normalized size of antiderivative = 1.32

method	result
default	$2(a-b+c) \left( \frac{(a^2c\sqrt{-4ac+b^2} - ab^2\sqrt{-4ac+b^2} - 2cab\sqrt{-4ac+b^2} + b^3\sqrt{-4ac+b^2} + 3ca^2b + 2a^2c^2 - ab^3 - 4ab^2c + b^4) \operatorname{arctanh}\left(\frac{(-a+b-c)\tan\left(\frac{x}{2}\right)}{\sqrt{(\sqrt{-4ac+b^2}-a+c)(a-b+c)}}\right)}{2\sqrt{-4ac+b^2}(a-b+c)\sqrt{(\sqrt{-4ac+b^2}-a+c)(a-b+c)}} \right)$
risch	Expression too large to display

[In] `int(cos(x)^4/(a+cos(x)*b+c*cos(x)^2),x,method=_RETURNVERBOSE)`

[Out] 
$$\frac{2/c^3(a-b+c) \left( \frac{1}{2}(a^2c(-4ac+b^2)^{1/2} - ab^2(-4ac+b^2)^{1/2} - 2c^2ab(-4ac+b^2)^{1/2} + b^3(-4ac+b^2)^{1/2} + 3ca^2b + 2a^2c^2 - ab^3 - 4ab^2c + b^4) \operatorname{arctanh}\left(\frac{(-a+b-c)\tan(1/2x)}{(((-4ac+b^2)^{1/2}-a+c)(a-b+c))^{1/2}}\right) + \frac{1}{2}(a^2c(-4ac+b^2)^{1/2} - ab^2(-4ac+b^2)^{1/2} - 2c^2ab(-4ac+b^2)^{1/2} + b^3(-4ac+b^2)^{1/2} - 3c^2a^2b - 2a^2c^2 + ab^3 + 4ab^2c - b^4) \operatorname{arctan}\left(\frac{(a-b+c)\tan(1/2x)}{(((-4ac+b^2)^{1/2}+a-c)(a-b+c))^{1/2}}\right) - 2/c^3 \left( \frac{(cb+1/2c^2)\tan(1/2x)^3 + (cb-1/2c^2)\tan(1/2x)}{(1+\tan(1/2x)^2)^2} + \frac{1}{2}(2ac-2b^2-c^2) \operatorname{arctan}(\tan(1/2x)) \right) \right)}{(((-4ac+b^2)^{1/2}-a+c)(a-b+c))^{1/2}}$$

**Fricas [B] (verification not implemented)**

Leaf count of result is larger than twice the leaf count of optimal. 8167 vs. 2(282) = 564.

Time = 5.52 (sec) , antiderivative size = 8167, normalized size of antiderivative = 25.05

$$\int \frac{\cos^4(x)}{a + b \cos(x) + c \cos^2(x)} dx = \text{Too large to display}$$

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

[Out] Too large to include

**Sympy [F(-1)]**

Timed out.

$$\int \frac{\cos^4(x)}{a + b \cos(x) + c \cos^2(x)} dx = \text{Timed out}$$

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

```
[Out] Timed out
```

**Maxima [F]**

$$\int \frac{\cos^4(x)}{a + b \cos(x) + c \cos^2(x)} dx = \int \frac{\cos(x)^4}{c \cos(x)^2 + b \cos(x) + a} dx$$

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

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

**Giac [B] (verification not implemented)**

Leaf count of result is larger than twice the leaf count of optimal. 12587 vs. 2(282) = 564.

Time = 2.78 (sec) , antiderivative size = 12587, normalized size of antiderivative = 38.61

$$\int \frac{\cos^4(x)}{a + b \cos(x) + c \cos^2(x)} dx = \text{Too large to display}$$

[In] integrate(cos(x)^4/(a+b\*cos(x)+c\*cos(x)^2),x, algorithm="giac")

[Out]  $-(2a^3b^6 - 6a^2b^7 + 6ab^8 - 2b^9 - 18a^4b^4c + 56a^3b^5c - 54a^2b^6c + 12ab^7c + 4b^8c + 48a^5b^2c^2 - 160a^4b^3c^2 + 140a^3b^4c^2 + 12a^2b^5c^2 - 38ab^6c^2 - 2b^7c^2 - 32a^6c^3 + 128a^5b^3c^3 - 64a^4b^2c^3 - 160a^3b^3c^3 + 110a^2b^4c^3 + 20ab^5c^3 - 64a^5c^4 + 192a^4b^2c^4 - 80a^3b^2c^4 - 64a^2b^3c^4 - 32a^4c^5 + 64a^3b^2c^5 + 3\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c))\sqrt{b^2 - 4ac}a^3b^4 - 2(b^2 - 4ac)a^3b^4 - 5\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c))\sqrt{b^2 - 4ac}a^2b^5 + 6(b^2 - 4ac)a^2b^5 - 3\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c))\sqrt{b^2 - 4ac}ab^6 - 6(b^2 - 4ac)ab^6 + 5\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c))\sqrt{b^2 - 4ac}b^7 + 2(b^2 - 4ac)b^7 - 15\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c))\sqrt{b^2 - 4ac}a^4b^2c + 10(b^2 - 4ac)a^4b^2c + 28\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c))\sqrt{b^2 - 4ac}a^3b^3c - 32(b^2 - 4ac)a^3b^3c + 27\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c))\sqrt{b^2 - 4ac}a^2b^4c + 30(b^2 - 4ac)a^2b^4c - 38\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c))\sqrt{b^2 - 4ac}ab^5c - 4(b^2 - 4ac)ab^5c - 6\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c))\sqrt{b^2 - 4ac}b^6c - 4(b^2 - 4ac)b^6c + 12\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c))\sqrt{b^2 - 4ac}a^5c^2 - 8(b^2 - 4ac)a^5c^2 - 32\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c))\sqrt{b^2 - 4ac}a^4b^2c^2 + 32(b^2 - 4ac)a^4b^2c^2 - 74\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c))\sqrt{b^2 - 4ac}a^3b^2c^2 - 20(b^2 - 4ac)a^3b^2c^2 + 94\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c))\sqrt{b^2 - 4ac}a^2b^3c^2 - 28(b^2 - 4ac)a^2b^3c^2 + 31\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c))\sqrt{b^2 - 4ac}ab^4c^2 + 22(b^2 - 4ac)ab^4c^2 + 5\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c))\sqrt{b^2 - 4ac}b^5c^2 + 56\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c))\sqrt{b^2 - 4ac}a^4c^3 - 16(b^2 - 4ac)a^4c^3 - 88\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c))\sqrt{b^2 - 4ac}a^3b^2c^3 + 48(b^2 - 4ac)a^3b^2c^3 - 23\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c))\sqrt{b^2 - 4ac}a^2b^2c^3 - 22(b^2 - 4ac)a^2b^2c^3 - 30\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c))\sqrt{b^2 - 4ac}ab^2$

$$\begin{aligned}
& 3c^3 - 12*(b^2 - 4ac)*a*b^3*c^3 - 20*\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}*(b^2 - 4ac)*(a - b + c)*\sqrt{b^2 - 4ac}*a^3*c^4 - 8*(b^2 - 4ac)*a^3*c^4 + 40*\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}*(a - b + c)*\sqrt{b^2 - 4ac}*a^2*b*c^4 + 16*(b^2 - 4ac)*a^2*b*c^4)*c^2*abs(a - b + c) + (4*a^3*b^6*c - 4*a^2*b^7*c - 4*a*b^8*c + 4*b^9*c - 36*a^4*b^4*c^2 + 32*a^3*b^5*c^2 + 52*a^2*b^6*c^2 - 40*a*b^7*c^2 - 8*b^8*c^2 + 96*a^5*b^2*c^3 - 64*a^4*b^3*c^3 - 232*a^3*b^4*c^3 + 120*a^2*b^5*c^3 + 84*a*b^6*c^3 + 4*b^7*c^3 - 64*a^6*c^4 + 384*a^4*b^2*c^4 - 64*a^3*b^3*c^4 - 292*a^2*b^4*c^4 - 40*a*b^5*c^4 - 128*a^5*c^5 - 128*a^4*b*c^5 + 352*a^3*b^2*c^5 + 128*a^2*b^3*c^5 - 64*a^4*c^6 - 128*a^3*b*c^6 + 3*\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}*(a - b + c))*a^4*b^4*c - 2*\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}*(a - b + c))*a^3*b^5*c - 8*\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}*(a - b + c))*a^2*b^6*c + 2*\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}*(a - b + c))*a*b^7*c + 5*\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}*(a - b + c))*b^8*c - 15*\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}*(a - b + c))*a^5*b^2*c^2 + 7*\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}*(a - b + c))*a^4*b^3*c^2 + 62*\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}*(a - b + c))*a^3*b^4*c^2 - 51*\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}*(a - b + c))*a*b^6*c^2 - 11*\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}*(a - b + c))*b^7*c^2 + 12*\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}*(a - b + c))*a^6*c^3 + 4*\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}*(a - b + c))*a^5*b*c^3 - 137*\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}*(a - b + c))*a^4*b^2*c^3 - 56*\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}*(a - b + c))*a^3*b^3*c^3 + 164*\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}*(a - b + c))*a^2*b^4*c^3 + 86*\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}*(a - b + c))*a*b^5*c^3 + 11*\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}*(a - b + c))*b^6*c^3 + 68*\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}*(a - b + c))*a^5*c^4 + 96*\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}*(a - b + c))*a^4*b*c^4 - 169*\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}*(a - b + c))*a^3*b^2*c^4 - 197*\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}*(a - b + c))*a^2*b^3*c^4 - 71*\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}*(a - b + c))*a*b^4*c^4 - 5*\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}*(a - b + c))*b^5*c^4 + 36*\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}*(a - b + c))*a^4*c^5 + 116*\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}*(a - b + c))*a^3*b*c^5 + 113*\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}*(a - b + c))*a^2*b^2*c^5 + 30*\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}*(a - b + c))*a*b^3*c^5 - 20*\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}*(a - b + c))*a^3*c^6 - 40*\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}*(a - b + c))*a^2*b*c^6 - 4*(b^2 - 4ac)*a^3*b^4*c + 4*(b^2 - 4ac)*a^2*b^5*c + 4*(b^2 - 4ac)*a*b^6*c - 4*(b^2 - 4ac)*b^7*c + 20*(b^2 - 4ac)*a^4*b^2*c^2 - 16*(b^2 - 4ac)*a^3*b^3*c^2 - 36*(b^2 - 4ac)*a^2*b^4*c^2 + 24*(b^2 - 4ac)*a*b^5*c^2 + 8*(b^2 - 4ac)*b^6*c^2 - 16*(b^2 - 4ac)*a^5*c^3 + 88*(b^2 - 4ac)*a^3*b^2*c^3 - 24*(b^2 - 4ac)*a^2*b^3*c^3 - 52*(b^2 - 4ac)*a*b^4*c^3 - 4*(b^2 - 4ac)*b^5*c^3 - 32*(b^2 - 4ac)*a^4*c^4 - 32*(b^2 - 4ac)*a^3*b*c^4 + 84*(b^2 - 4ac)*a^2*b^2*c^4 + 24*(b^2 - 4ac)*a*b^
\end{aligned}$$

$$\begin{aligned}
& 3c^4 - 16(b^2 - 4ac)a^3c^5 - 32(b^2 - 4ac)a^2bc^5) \cdot \text{abs}(a - b + c) \cdot \text{abs}(c) + (2a^4b^5c^2 - 6a^3b^6c^2 + 6a^2b^7c^2 - 2ab^8c^2 - \\
& 14a^5b^3c^3 + 44a^4b^4c^3 - 44a^3b^5c^3 + 14a^2b^6c^3 - 2ab^7c^3 + 2b^8c^3 + 24a^6b^2c^4 - 84a^5b^2c^4 + 82a^4b^3c^4 - 20a^3b^4c^4 + 12a^2b^5c^4 - 10ab^6c^4 - 4b^7c^4 + 16a^6c^5 - 8a^5b^2c^5 - 20a^4b^2c^5 - 10a^3b^3c^5 - 8a^2b^4c^5 + 30ab^5c^5 + 2b^6c^5 + 16a^5c^6 - 24a^4b^2c^6 + 68a^3b^2c^6 - 58a^2b^3c^6 - 16ab^4c^6 - 16a^4c^7 + 8a^3b^2c^7 + 36a^2b^2c^7 - 16a^3c^8 + 3\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c)) \cdot \sqrt{b^2 - 4ac} \cdot a^4 \cdot b^3c^2 - 2(b^2 - 4ac)a^4b^3c^2 - 5\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c) \cdot \sqrt{b^2 - 4ac} \cdot a^3b^4c^2 + 6(b^2 - 4ac)a^3b^4c^2 - 3\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c) \cdot \sqrt{b^2 - 4ac} \cdot a^2b^5c^2 - 6(b^2 - 4ac)a^2b^5c^2 + 5\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c) \cdot \sqrt{b^2 - 4ac} \cdot ab^6c^2 + 2(b^2 - 4ac)ab^6c^2 - 9\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c) \cdot \sqrt{b^2 - 4ac} \cdot a^5b^2c^3 + 6(b^2 - 4ac)a^5b^2c^3 + 18\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c) \cdot \sqrt{b^2 - 4ac} \cdot a^4b^2c^3 - 20(b^2 - 4ac)a^4b^2c^3 + 18\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c) \cdot \sqrt{b^2 - 4ac} \cdot a^3b^3c^3 + 20(b^2 - 4ac)a^3b^3c^3 - 23\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c) \cdot \sqrt{b^2 - 4ac} \cdot a^2b^4c^3 - 6(b^2 - 4ac)a^2b^4c^3 - 3\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c) \cdot \sqrt{b^2 - 4ac} \cdot ab^5c^3 + 2(b^2 - 4ac)ab^5c^3 - 5\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c) \cdot \sqrt{b^2 - 4ac} \cdot b^6c^3 - 2(b^2 - 4ac)b^6c^3 - 6\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c) \cdot \sqrt{b^2 - 4ac} \cdot a^5c^4 + 4(b^2 - 4ac)a^5c^4 - 29\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c) \cdot \sqrt{b^2 - 4ac} \cdot a^4b^2c^4 - 2(b^2 - 4ac)a^4b^2c^4 + 30\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c) \cdot \sqrt{b^2 - 4ac} \cdot a^3b^2c^4 - 4(b^2 - 4ac)a^3b^2c^4 - 2\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c) \cdot \sqrt{b^2 - 4ac} \cdot a^2b^3c^4 - 4(b^2 - 4ac)a^2b^3c^4 + 33\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c) \cdot \sqrt{b^2 - 4ac} \cdot ab^4c^4 + 2(b^2 - 4ac)ab^4c^4 + 6\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c) \cdot \sqrt{b^2 - 4ac} \cdot b^5c^4 + 4(b^2 - 4ac)b^5c^4 - 22\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c) \cdot \sqrt{b^2 - 4ac} \cdot a^4c^5 + 4(b^2 - 4ac)a^4c^5 + 41\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c) \cdot \sqrt{b^2 - 4ac} \cdot a^3b^2c^5 - 6(b^2 - 4ac)a^3b^2c^5 - 68\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c) \cdot \sqrt{b^2 - 4ac} \cdot a^2b^2c^5 + 16(b^2 - 4ac)a^2b^2c^5 - 19\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c) \cdot \sqrt{b^2 - 4ac} \cdot ab^3c^5 - 14(b^2 - 4ac)ab^3c^5 - 5\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c) \cdot \sqrt{b^2 - 4ac} \cdot b^4c^5 - 2(b^2 - 4ac)b^4c^5 + 38\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c) \cdot \sqrt{b^2 - 4ac} \cdot a^3c^6 - 4(b^2 - 4ac)a^3c^6 - 3\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c) \cdot \sqrt{b^2 - 4ac} \cdot a^2b^2c^6 + 2(b^2 - 4ac)a^2b^2c^6
\end{aligned}$$

$$\begin{aligned}
& 6 + 20\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c)\sqrt{b^2 - 4ac} \\
& - 4ac)ab^2c^6 + 8(b^2 - 4ac)ab^2c^6 - 10\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c)\sqrt{b^2 - 4ac}a^2c^7 - 4(b^2 - 4ac)a^2c^7) \cdot \text{abs}(a - b + c) \cdot (\pi \cdot \text{floor}(1/2x/\pi + 1/2) + \arctan(2\sqrt{1/2} \cdot \tan(1/2x)/\sqrt{(2ac^3 - 2c^4 + \sqrt{-4(ac^3 + bc^3 + c^4)(ac^3 - bc^3 + c^4)} + 4(ac^3 - c^4)^2})/(ac^3 - bc^3 + c^4)))) / ((3a^6b^2c^4 - 8a^5b^3c^4 - a^4b^4c^4 + 16a^3b^5c^4 - 7a^2b^6c^4 - 8ab^7c^4 + 5b^8c^4 - 12a^7c^5 + 32a^6bc^5 + 30a^5b^2c^5 - 112a^4b^3c^5 + 8a^3b^4c^5 + 96a^2b^5c^5 - 26ab^6c^5 - 16b^7c^5 - 104a^6c^6 + 192a^5bc^6 + 149a^4b^2c^6 - 336a^3b^3c^6 - 30a^2b^4c^6 + 112ab^5c^6 + 17b^6c^6 - 276a^5c^7 + 320a^4bc^7 + 292a^3b^2c^7 - 224a^2b^3c^7 - 120ab^4c^7 - 304a^4c^8 + 128a^3b^3c^8 + 237a^2b^2c^8 + 24ab^3c^8 - 17b^4c^8 - 116a^3c^9 - 96a^2b^3c^9 + 62ab^2c^9 + 16b^3c^9 + 24a^2c^{10} - 64ab^2c^{10} - 5b^2c^{10} + 20ac^{11}) \cdot \text{abs}(c) - ((2a^3b^6 - 6a^2b^7 + 6ab^8 - 2b^9 - 18a^4b^4c + 56a^3b^5c - 54a^2b^6c + 12ab^7c + 4b^8c + 48a^5b^2c^2 - 160a^4b^3c^2 + 140a^3b^4c^2 + 12a^2b^5c^2 - 38ab^6c^2 - 2b^7c^2 - 32a^6c^3 + 128a^5bc^3 - 64a^4b^2c^3 - 160a^3b^3c^3 + 110a^2b^4c^3 + 20ab^5c^3 - 64a^5c^4 + 192a^4bc^4 - 80a^3b^2c^4 - 64a^2b^3c^4 - 32a^4c^5 + 64a^3bc^5 + 3\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c))\sqrt{b^2 - 4ac}a^3b^4 - 2(b^2 - 4ac)a^3b^4 - 5\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c))\sqrt{b^2 - 4ac}a^2b^5 + 6(b^2 - 4ac)a^2b^5 - 3\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c))\sqrt{b^2 - 4ac}ab^6 - 6(b^2 - 4ac)ab^6 + 5\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c))\sqrt{b^2 - 4ac}b^7 + 2(b^2 - 4ac)b^7 - 15\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c))\sqrt{b^2 - 4ac}a^4b^2c + 10(b^2 - 4ac)a^4b^2c + 28\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c))\sqrt{b^2 - 4ac}a^3b^3c - 32(b^2 - 4ac)a^3b^3c + 27\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c))\sqrt{b^2 - 4ac}a^2b^4c + 30(b^2 - 4ac)a^2b^4c - 38\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c))\sqrt{b^2 - 4ac}ab^5c - 4(b^2 - 4ac)ab^5c - 6\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c))\sqrt{b^2 - 4ac}b^6c - 4(b^2 - 4ac)b^6c + 12\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c))\sqrt{b^2 - 4ac}a^5c^2 - 8(b^2 - 4ac)a^5c^2 - 32\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c))\sqrt{b^2 - 4ac}a^4bc^2 + 32(b^2 - 4ac)a^4bc^2 - 74\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c))\sqrt{b^2 - 4ac}a^3b^2c^2 - 20(b^2 - 4ac)a^3b^2c^2 + 94\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c))\sqrt{b^2 - 4ac}a^2b^3c^2 - 28(b^2 - 4ac)a^2b^3c^2 + 31\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c))\sqrt{b^2 - 4ac}ab^4c^2 + 22(b^2 - 4ac)ab^4c^2 + 5\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c))\sqrt{b^2 - 4ac}b^5c^2 + 2(b^2 - 4ac)b^5c^2 + 56\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c))\sqrt{b^2 - 4ac}a^4c^3 - 16(b^2 - 4ac)a^4c^3 - 88\sqrt{a^2 - ab + bc -
\end{aligned}$$

$$\begin{aligned}
& c^2 - \sqrt{b^2 - 4ac}(a - b + c) \sqrt{b^2 - 4ac} a^3 b^2 c^3 + 48(b^2 - 4ac) a^3 b^2 c^3 - 23 \sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c) \sqrt{b^2 - 4ac} a^2 b^2 c^3 - 22(b^2 - 4ac) a^2 b^2 c^3 - 30 \sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c) \sqrt{b^2 - 4ac} a^2 b^3 c^3 - 12(b^2 - 4ac) a^2 b^3 c^3 - 20 \sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c) \sqrt{b^2 - 4ac} a^3 c^4 - 8(b^2 - 4ac) a^3 c^4 + 40 \sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c) \sqrt{b^2 - 4ac} a^2 b^2 c^4 + 16(b^2 - 4ac) a^2 b^2 c^4 c^2 \operatorname{abs}(a - b + c) - (4a^3 b^6 c - 4a^2 b^7 c - 4ab^8 c + 4b^9 c - 36a^4 b^4 c^2 + 32a^3 b^5 c^2 + 52a^2 b^6 c^2 - 40ab^7 c^2 - 8b^8 c^2 + 96a^5 b^2 c^3 - 64a^4 b^3 c^3 - 232a^3 b^4 c^3 + 120a^2 b^5 c^3 + 84ab^6 c^3 + 4b^7 c^3 - 64a^6 c^4 + 384a^4 b^2 c^4 - 64a^3 b^3 c^4 - 292a^2 b^4 c^4 - 40ab^5 c^4 - 128a^5 c^5 - 128a^4 b^2 c^5 + 352a^3 b^2 c^5 + 128a^2 b^3 c^5 - 64a^4 c^6 - 128a^3 b^2 c^6 - 3 \sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c) a^4 b^4 c + 2 \sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c) a^3 b^5 c + 8 \sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c) a^2 b^6 c - 2 \sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c) a b^7 c - 5 \sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c) b^8 c + 15 \sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c) a^5 b^2 c^2 - 7 \sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c) a^4 b^3 c^2 - 62 \sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c) a^3 b^4 c^2 + 51 \sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c) a^2 b^5 c^2 + 11 \sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c) a b^6 c^2 - 12 \sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c) a^6 c^3 - 4 \sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c) a^5 b^2 c^3 + 137 \sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c) a^4 b^2 c^3 + 56 \sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c) a^3 b^3 c^3 - 164 \sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c) a^2 b^4 c^3 - 86 \sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c) a^2 b^5 c^3 - 11 \sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c) a b^6 c^3 - 68 \sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c) a^5 c^4 - 96 \sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c) a^4 b^2 c^4 + 169 \sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c) a^3 b^2 c^4 + 197 \sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c) a^2 b^3 c^4 + 71 \sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c) a^2 b^4 c^4 + 5 \sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c) a^2 b^5 c^4 - 36 \sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c) a^4 c^5 - 116 \sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c) a^3 b^2 c^5 - 113 \sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c) a^2 b^2 c^5 - 30 \sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c) a^2 b^3 c^5 + 20 \sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c) a^3 c^6 + 40 \sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c) a^2 b^2 c^6 - 4(b^2 - 4ac) a^3 b^4 c + 4(b^2 - 4ac) a^2 b^5 c + 4(b^2 - 4ac) a b^6 c - 4(b^2 - 4ac) b^7 c + 20(b^2 - 4ac) a^4 b^2 c^2 - 16(b^2 - 4ac) a^3 b^3 c^2 - 36(b^2 - 4ac) a^2 b^4 c^2 +
\end{aligned}$$



$$\begin{aligned}
& 24*(b^2 - 4*a*c)*a*b^5*c^2 + 8*(b^2 - 4*a*c)*b^6*c^2 - 16*(b^2 - 4*a*c)*a^5*c^3 + 88*(b^2 - 4*a*c)*a^3*b^2*c^3 - 24*(b^2 - 4*a*c)*a^2*b^3*c^3 - 52*(b^2 - 4*a*c)*a*b^4*c^3 - 4*(b^2 - 4*a*c)*b^5*c^3 - 32*(b^2 - 4*a*c)*a^4*c^4 - 32*(b^2 - 4*a*c)*a^3*b*c^4 + 84*(b^2 - 4*a*c)*a^2*b^2*c^4 + 24*(b^2 - 4*a*c)*a*b^3*c^4 - 16*(b^2 - 4*a*c)*a^3*c^5 - 32*(b^2 - 4*a*c)*a^2*b*c^5)*abs(a - b + c)*abs(c) + (2*a^4*b^5*c^2 - 6*a^3*b^6*c^2 + 6*a^2*b^7*c^2 - 2*a*b^8*c^2 - 14*a^5*b^3*c^3 + 44*a^4*b^4*c^3 - 44*a^3*b^5*c^3 + 14*a^2*b^6*c^3 - 2*a*b^7*c^3 + 2*b^8*c^3 + 24*a^6*b*c^4 - 84*a^5*b^2*c^4 + 82*a^4*b^3*c^4 - 20*a^3*b^4*c^4 + 12*a^2*b^5*c^4 - 10*a*b^6*c^4 - 4*b^7*c^4 + 16*a^6*c^5 - 8*a^5*b*c^5 - 20*a^4*b^2*c^5 - 10*a^3*b^3*c^5 - 8*a^2*b^4*c^5 + 30*a*b^5*c^5 + 2*b^6*c^5 + 16*a^5*c^6 - 24*a^4*b*c^6 + 68*a^3*b^2*c^6 - 58*a^2*b^3*c^6 - 16*a*b^4*c^6 - 16*a^4*c^7 + 8*a^3*b*c^7 + 36*a^2*b^2*c^7 - 16*a^3*c^8 + 3*sqrt(a^2 - a*b + b*c - c^2 - sqrt(b^2 - 4*a*c))*(a - b + c))*sqrt(b^2 - 4*a*c)*a^4*b^3*c^2 - 2*(b^2 - 4*a*c)*a^4*b^3*c^2 - 5*sqrt(a^2 - a*b + b*c - c^2 - sqrt(b^2 - 4*a*c))*(a - b + c))*sqrt(b^2 - 4*a*c)*a^3*b^4*c^2 + 6*(b^2 - 4*a*c)*a^3*b^4*c^2 - 3*sqrt(a^2 - a*b + b*c - c^2 - sqrt(b^2 - 4*a*c))*(a - b + c))*sqrt(b^2 - 4*a*c)*a^2*b^5*c^2 - 6*(b^2 - 4*a*c)*a^2*b^5*c^2 + 5*sqrt(a^2 - a*b + b*c - c^2 - sqrt(b^2 - 4*a*c))*(a - b + c))*sqrt(b^2 - 4*a*c)*a*b^6*c^2 + 2*(b^2 - 4*a*c)*a*b^6*c^2 - 9*sqrt(a^2 - a*b + b*c - c^2 - sqrt(b^2 - 4*a*c))*(a - b + c))*sqrt(b^2 - 4*a*c)*a^5*b*c^3 + 6*(b^2 - 4*a*c)*a^5*b*c^3 + 18*sqrt(a^2 - a*b + b*c - c^2 - sqrt(b^2 - 4*a*c))*(a - b + c))*sqrt(b^2 - 4*a*c)*a^4*b^2*c^3 - 20*(b^2 - 4*a*c)*a^4*b^2*c^3 + 18*sqrt(a^2 - a*b + b*c - c^2 - sqrt(b^2 - 4*a*c))*(a - b + c))*sqrt(b^2 - 4*a*c)*a^3*b^3*c^3 + 20*(b^2 - 4*a*c)*a^3*b^3*c^3 - 23*sqrt(a^2 - a*b + b*c - c^2 - sqrt(b^2 - 4*a*c))*(a - b + c))*sqrt(b^2 - 4*a*c)*a^2*b^4*c^3 - 6*(b^2 - 4*a*c)*a^2*b^4*c^3 - 3*sqrt(a^2 - a*b + b*c - c^2 - sqrt(b^2 - 4*a*c))*(a - b + c))*sqrt(b^2 - 4*a*c)*a*b^5*c^3 + 2*(b^2 - 4*a*c)*a*b^5*c^3 - 5*sqrt(a^2 - a*b + b*c - c^2 - sqrt(b^2 - 4*a*c))*(a - b + c))*sqrt(b^2 - 4*a*c)*b^6*c^3 - 2*(b^2 - 4*a*c)*b^6*c^3 - 6*sqrt(a^2 - a*b + b*c - c^2 - sqrt(b^2 - 4*a*c))*(a - b + c))*sqrt(b^2 - 4*a*c)*a^5*c^4 + 4*(b^2 - 4*a*c)*a^5*c^4 - 29*sqrt(a^2 - a*b + b*c - c^2 - sqrt(b^2 - 4*a*c))*(a - b + c))*sqrt(b^2 - 4*a*c)*a^4*b*c^4 - 2*(b^2 - 4*a*c)*a^4*b*c^4 + 30*sqrt(a^2 - a*b + b*c - c^2 - sqrt(b^2 - 4*a*c))*(a - b + c))*sqrt(b^2 - 4*a*c)*a^3*b^2*c^4 - 4*(b^2 - 4*a*c)*a^3*b^2*c^4 - 2*sqrt(a^2 - a*b + b*c - c^2 - sqrt(b^2 - 4*a*c))*(a - b + c))*sqrt(b^2 - 4*a*c)*a^2*b^3*c^4 - 4*(b^2 - 4*a*c)*a^2*b^3*c^4 + 33*sqrt(a^2 - a*b + b*c - c^2 - sqrt(b^2 - 4*a*c))*(a - b + c))*sqrt(b^2 - 4*a*c)*a*b^4*c^4 + 2*(b^2 - 4*a*c)*a*b^4*c^4 + 6*sqrt(a^2 - a*b + b*c - c^2 - sqrt(b^2 - 4*a*c))*(a - b + c))*sqrt(b^2 - 4*a*c)*b^5*c^4 + 4*(b^2 - 4*a*c)*b^5*c^4 - 22*sqrt(a^2 - a*b + b*c - c^2 - sqrt(b^2 - 4*a*c))*(a - b + c))*sqrt(b^2 - 4*a*c)*a^4*c^5 + 4*(b^2 - 4*a*c)*a^4*c^5 + 41*sqrt(a^2 - a*b + b*c - c^2 - sqrt(b^2 - 4*a*c))*(a - b + c))*sqrt(b^2 - 4*a*c)*a^3*b*c^5 - 6*(b^2 - 4*a*c)*a^3*b*c^5 - 68*sqrt(a^2 - a*b + b*c - c^2 - sqrt(b^2 - 4*a*c))*(a - b + c))*sqrt(b^2 - 4*a*c)*a^2*b^2*c^5 + 16*(b^2 - 4*a*c)*a^2*b^2*c^5 - 19*sqrt(a^2 - a*b + b*c - c^2 - sqrt(b^2 - 4*a*c))*(a - b + c))*sqrt(b^2 - 4*a*c)*a*b^3*c^5 - 14*(b^2 - 4*a*c)*a*b^3*c^5 - 5*sqrt(a^2 - a*b + b*c - c^2 - sqrt(b^2 -
\end{aligned}$$

```

4*a*c)*(a - b + c))*sqrt(b^2 - 4*a*c)*b^4*c^5 - 2*(b^2 - 4*a*c)*b^4*c^5 + 3
8*sqrt(a^2 - a*b + b*c - c^2 - sqrt(b^2 - 4*a*c)*(a - b + c))*sqrt(b^2 - 4*
a*c)*a^3*c^6 - 4*(b^2 - 4*a*c)*a^3*c^6 - 3*sqrt(a^2 - a*b + b*c - c^2 - sqrt
(b^2 - 4*a*c)*(a - b + c))*sqrt(b^2 - 4*a*c)*a^2*b*c^6 + 2*(b^2 - 4*a*c)*a
^2*b*c^6 + 20*sqrt(a^2 - a*b + b*c - c^2 - sqrt(b^2 - 4*a*c)*(a - b + c))*s
qrt(b^2 - 4*a*c)*a*b^2*c^6 + 8*(b^2 - 4*a*c)*a*b^2*c^6 - 10*sqrt(a^2 - a*b
+ b*c - c^2 - sqrt(b^2 - 4*a*c)*(a - b + c))*sqrt(b^2 - 4*a*c)*a^2*c^7 - 4*
(b^2 - 4*a*c)*a^2*c^7)*abs(a - b + c))*(pi*floor(1/2*x/pi + 1/2) + arctan(2
*sqrt(1/2)*tan(1/2*x)/sqrt((2*a*c^3 - 2*c^4 - sqrt(-4*(a*c^3 + b*c^3 + c^4)
*(a*c^3 - b*c^3 + c^4) + 4*(a*c^3 - c^4)^2))/(a*c^3 - b*c^3 + c^4))))/((3*a
^6*b^2*c^4 - 8*a^5*b^3*c^4 - a^4*b^4*c^4 + 16*a^3*b^5*c^4 - 7*a^2*b^6*c^4 -
8*a*b^7*c^4 + 5*b^8*c^4 - 12*a^7*c^5 + 32*a^6*b*c^5 + 30*a^5*b^2*c^5 - 112
*a^4*b^3*c^5 + 8*a^3*b^4*c^5 + 96*a^2*b^5*c^5 - 26*a*b^6*c^5 - 16*b^7*c^5 -
104*a^6*c^6 + 192*a^5*b*c^6 + 149*a^4*b^2*c^6 - 336*a^3*b^3*c^6 - 30*a^2*b
^4*c^6 + 112*a*b^5*c^6 + 17*b^6*c^6 - 276*a^5*c^7 + 320*a^4*b*c^7 + 292*a^3
*b^2*c^7 - 224*a^2*b^3*c^7 - 120*a*b^4*c^7 - 304*a^4*c^8 + 128*a^3*b*c^8 +
237*a^2*b^2*c^8 + 24*a*b^3*c^8 - 17*b^4*c^8 - 116*a^3*c^9 - 96*a^2*b*c^9 +
62*a*b^2*c^9 + 16*b^3*c^9 + 24*a^2*c^10 - 64*a*b*c^10 - 5*b^2*c^10 + 20*a*c
^11)*abs(c)) + 1/2*(2*b^2 - 2*a*c + c^2)*x/c^3 - (2*b*tan(1/2*x)^3 + c*tan(
1/2*x)^3 + 2*b*tan(1/2*x) - c*tan(1/2*x))/((tan(1/2*x)^2 + 1)^2*c^2)

```

## Mupad [B] (verification not implemented)

Time = 16.24 (sec) , antiderivative size = 45364, normalized size of antiderivative = 139.15

$$\int \frac{\cos^4(x)}{a + b \cos(x) + c \cos^2(x)} dx = \text{Too large to display}$$

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

```

[Out] atan((((2048*(12*a^3*c^11 - 28*a^4*c^10 - 44*a^5*c^9 + 72*a^6*c^8 + 88*a^7
*c^7 + 12*a^8*c^6 + b^5*c^9 - 4*b^6*c^8 + 10*b^7*c^7 - 20*b^8*c^6 + 29*b^9*
c^5 - 30*b^10*c^4 + 26*b^11*c^3 - 12*b^12*c^2 - 6*a*b^3*c^10 + 27*a*b^4*c^9
- 72*a*b^5*c^8 + 154*a*b^6*c^7 - 238*a*b^7*c^6 + 251*a*b^8*c^5 - 228*a*b^9
*c^4 + 98*a*b^10*c^3 + 20*a*b^11*c^2 + 8*a^2*b*c^11 - 68*a^3*b*c^10 + 112*a
^4*b*c^9 + 100*a^5*b*c^8 - 200*a^6*b*c^7 - 96*a^7*b*c^6 - 47*a^2*b^2*c^10 +
145*a^2*b^3*c^9 - 354*a^2*b^4*c^8 + 612*a^2*b^5*c^7 - 655*a^2*b^6*c^6 + 63
5*a^2*b^7*c^5 - 202*a^2*b^8*c^4 - 222*a^2*b^9*c^3 + 4*a^2*b^10*c^2 + 239*a^
3*b^2*c^9 - 524*a^3*b^3*c^8 + 536*a^3*b^4*c^7 - 564*a^3*b^5*c^6 - 115*a^3*b
^6*c^5 + 856*a^3*b^7*c^4 + 2*a^3*b^8*c^3 - 20*a^3*b^9*c^2 - 37*a^4*b^2*c^8
+ 9*a^4*b^3*c^7 + 583*a^4*b^4*c^6 - 1362*a^4*b^5*c^5 - 152*a^4*b^6*c^4 + 15
6*a^4*b^7*c^3 + 8*a^4*b^8*c^2 - 399*a^5*b^2*c^7 + 904*a^5*b^3*c^6 + 394*a^5
*b^4*c^5 - 388*a^5*b^5*c^4 - 60*a^5*b^6*c^3 - 340*a^6*b^2*c^6 + 364*a^6*b^3
*c^5 + 136*a^6*b^4*c^4 - 100*a^7*b^2*c^5))/c^8 + (((2048*(16*a^3*c^13 - 32*
a^2*c^14 + 176*a^4*c^12 + 176*a^5*c^11 + 48*a^6*c^10 - 2*b^4*c^12 + 6*b^5*c

```

$$\begin{aligned}
& ^{11} - 18b^6c^{10} + 26b^7c^9 - 12b^8c^8 + 16a^2b^2c^{13} - 40a^3b^3c^{12} \\
& + 122a^4b^4c^{11} - 192a^5b^5c^{10} + 74a^6b^6c^9 + 20a^7b^7c^8 + 64a^8b^8c^7 \\
& + 12a^9b^9c^6 + 12a^{10}b^{10}c^5 + 12a^{11}b^{11}c^4 - 144a^3b^3c^{12} - 352a^4b^4c^{11} \\
& - 144a^5b^5c^{10} - 204a^6b^6c^9 + 388a^7b^7c^8 - 50a^8b^8c^7 - 260a^9b^9c^6 \\
& + 496a^{10}b^{10}c^5 + 10a^{11}b^{11}c^4 - 20a^{12}b^{12}c^3 - 148a^{13}b^{13}c^2 \\
& + 116a^{14}b^{14}c - 8a^{15}b^{15})/c^8 - (2048\tan(x/2)*(-a^2b^8 - b^{10} + 8a^5c^5 + 8a^6c^4 - b^7*(-(4ac - b^2)^3)^{1/2} \\
& - 10a^3b^6c + a^2b^5*(-(4ac - b^2)^3)^{1/2} - 52a^2b^6c^2 + 96a^3b^4c^3 - 66a^4b^2c^4 \\
& + 33a^4b^4c^2 - 38a^5b^2c^3 + 12a^6b^8c + 4a^3b^3c^3*(-(4ac - b^2)^3)^{1/2} - 4a^3b^3c^3*(-(4ac - b^2)^3)^{1/2} \\
& + 3a^4b^3c^2*(-(4ac - b^2)^3)^{1/2} - 10a^2b^3c^2*(-(4ac - b^2)^3)^{1/2} + 6a^2b^3c^2*(-(4ac - b^2)^3)^{1/2} \\
& )/(2*(16a^2c^{10} + 32a^3c^9 + 16a^4c^8 + b^4c^8 - b^6c^6 - 8a^2b^2c^9 + 10a^3b^4c^7 - 32a^4b^2c^8 \\
& + a^2b^4c^6 - 8a^3b^2c^7)))^{1/2}*(32a^2c^{16} - 64a^2c^{15} - 128a^3c^{14} + 64a^4c^{13} + 96a^5c^{12} \\
& - 8b^2c^{15} + 24b^3c^{14} - 32b^4c^{13} + 32b^5c^{12} - 24b^6c^{11} + 8b^7c^{10} + 144a^2b^2c^{14} - 200a^3b^3c^{13} \\
& + 184a^4b^4c^{12} - 56a^5b^5c^{11} - 8a^6b^6c^{10} + 288a^2b^2c^{14} + 352a^3b^3c^{13} - 32a^4b^4c^{12} \\
& - 320a^5b^5c^{11} + 8a^6b^6c^{10} + 96a^7b^7c^9 - 8a^8b^8c^8 - 272a^9b^9c^7 + 40a^{10}b^{10}c^6 \\
& + 8a^{11}b^{11}c^5 - 56a^{12}b^{12}c^4 - 96a^{13}b^{13}c^3 - 144a^{14}b^{14}c^2 - 144a^{15}b^{15}c) \\
& /c^8*(-(a^2b^8 - b^{10} + 8a^5c^5 + 8a^6c^4 - b^7*(-(4ac - b^2)^3)^{1/2} - 10a^3b^6c + a^2b^5*(-(4ac - b^2)^3)^{1/2} \\
& - 52a^2b^6c^2 + 96a^3b^4c^3 - 66a^4b^2c^4 + 33a^4b^4c^2 - 38a^5b^2c^3 + 12a^6b^8c + 4a^3b^3c^3*(-(4ac - b^2)^3)^{1/2} \\
& - 4a^3b^3c^3*(-(4ac - b^2)^3)^{1/2} + 3a^4b^3c^2*(-(4ac - b^2)^3)^{1/2} - 10a^2b^3c^2*(-(4ac - b^2)^3)^{1/2} \\
& + 6a^2b^3c^2*(-(4ac - b^2)^3)^{1/2} )/(2*(16a^2c^{10} + 32a^3c^9 + 16a^4c^8 + b^4c^8 - b^6c^6 - 8a^2b^2c^9 \\
& + 10a^3b^4c^7 - 32a^4b^2c^8 + a^2b^4c^6 - 8a^3b^2c^7)))^{1/2} - (2048\tan(x/2)*(8a^2c^{14} - 64a^2c^{13} \\
& + 80a^3c^{12} + 168a^4c^{11} - 192a^5c^{10} - 136a^6c^9 + 72a^7c^8 - 2b^2c^{13} + 6b^3c^{12} - 17b^4c^{11} \\
& + 33b^5c^{10} - 49b^6c^9 + 61b^7c^8 - 52b^8c^7 + 36b^9c^6 - 24b^{10}c^5 + 8b^{11}c^4 + 84a^2b^2c^{12} \\
& - 178a^3b^3c^{11} + 295a^4b^4c^{10} - 416a^5b^5c^9 + 375a^6b^6c^8 - 308a^7b^7c^7 + 244a^8b^8c^6 - 72a^9b^9c^5 \\
& - 8a^{10}b^{10}c^4 + 184a^{11}b^{11}c^3 - 328a^{12}b^{12}c^2 - 16a^{13}b^{13}c - 496a^{14}b^{14}c + 88a^{15}b^{15}) \\
& - 416a^{16}b^{16}c + 770a^{17}b^{17}c - 723a^{18}b^{18}c + 779a^{19}b^{19}c - 732a^{20}b^{20}c + 80a^{21}b^{21}c + 112a^{22}b^{22}c \\
& - 8a^{23}b^{23}c + 180a^{24}b^{24}c - 494a^{25}b^{25}c + 521a^{26}b^{26}c - 572a^{27}b^{27}c + 424a^{28}b^{28}c \\
& - 56a^{29}b^{29}c + 8a^{30}b^{30}c + 234a^{31}b^{31}c - 1152a^{32}b^{32}c + 416a^{33}b^{33}c - 140a^{34}b^{34}c - 72a^{35}b^{35}c \\
& + 64a^{36}b^{36}c + 192a^{37}b^{37}c + 220a^{38}b^{38}c - 256a^{39}b^{39}c - 24a^{40}b^{40}c^{13}))/c^8*(-(a^2b^8 - b^{10} + 8a^5c^5 + 8a^6c^4 - b^7*(-(4ac - b^2)^3)^{1/2} \\
& - 10a^3b^6c + a^2b^5*(-(4ac - b^2)^3)^{1/2} - 52a^2b^6c^2 + 96a^3b^4c^3 - 66a^4b^2c^4 + 33a^4b^4c^2 - 38a^5b^2c^3 \\
& + 12a^6b^8c + 4a^3b^3c^3*(-(4ac - b^2)^3)^{1/2} - 4a^3b^3c^3*(-(4ac - b^2)^3)^{1/2} + 3a^4b^3c^2*(-(4ac - b^2)^3)^{1/2} \\
& - 10a^2b^3c^2*(-(4ac - b^2)^3)^{1/2} + 6a^2b^3c^2*(-(4ac - b^2)^3)^{1/2} )/(2*(16a^2c^{10} + 32a^3c^9 + 16a^4c^8 + b^4c^8 - b^6c^6 - 8a^2b^2c^9 \\
& + 10a^3b^4c^7 - 32a^4b^2c^8 + a^2b^4c^6 - 8a^3b^2c^7)))^{1/2}
\end{aligned}$$

$$\begin{aligned}
& (2*(16*a^2*c^{10} + 32*a^3*c^9 + 16*a^4*c^8 + b^4*c^8 - b^6*c^6 - 8*a*b^2*c^9 \\
& + 10*a*b^4*c^7 - 32*a^2*b^2*c^8 + a^2*b^4*c^6 - 8*a^3*b^2*c^7)))^{(1/2))*(- \\
& (a^2*b^8 - b^{10} + 8*a^5*c^5 + 8*a^6*c^4 - b^7*(-(4*a*c - b^2)^3)^{(1/2)} - 10 \\
& *a^3*b^6*c + a^2*b^5*(-(4*a*c - b^2)^3)^{(1/2)} - 52*a^2*b^6*c^2 + 96*a^3*b^4 \\
& *c^3 - 66*a^4*b^2*c^4 + 33*a^4*b^4*c^2 - 38*a^5*b^2*c^3 + 12*a*b^8*c + 4*a^ \\
& 3*b*c^3*(-(4*a*c - b^2)^3)^{(1/2)} - 4*a^3*b^3*c*(-(4*a*c - b^2)^3)^{(1/2)} + 3 \\
& *a^4*b*c^2*(-(4*a*c - b^2)^3)^{(1/2)} - 10*a^2*b^3*c^2*(-(4*a*c - b^2)^3)^{(1/ \\
& 2)} + 6*a*b^5*c*(-(4*a*c - b^2)^3)^{(1/2)))/(2*(16*a^2*c^{10} + 32*a^3*c^9 + 16* \\
& a^4*c^8 + b^4*c^8 - b^6*c^6 - 8*a*b^2*c^9 + 10*a*b^4*c^7 - 32*a^2*b^2*c^8 + \\
& a^2*b^4*c^6 - 8*a^3*b^2*c^7)))^{(1/2)} - (2048*\tan(x/2)*(20*a*b^{12} + 4*b^{12}* \\
& c - 4*b^{13} - 40*a^2*b^{11} + 40*a^3*b^{10} - 20*a^4*b^9 + 4*a^5*b^8 + 2*a^4*c^9 \\
& - 18*a^5*c^8 + 38*a^6*c^7 + 2*a^7*c^6 - 44*a^8*c^5 + 12*a^9*c^4 + b^8*c^5 \\
& - b^9*c^4 + 4*b^{10}*c^3 - 4*b^{11}*c^2 - 8*a*b^6*c^6 + 4*a*b^7*c^5 - 31*a*b^8* \\
& c^4 + 20*a*b^9*c^3 - 20*a*b^{10}*c^2 - 160*a^2*b^{10}*c + 320*a^3*b^9*c + 26*a^ \\
& 4*b*c^8 - 300*a^4*b^8*c - 84*a^5*b*c^7 + 136*a^5*b^7*c + 2*a^6*b*c^6 - 24*a^ \\
& ^6*b^6*c + 168*a^7*b*c^5 - 92*a^8*b*c^4 + 20*a^2*b^4*c^7 + 8*a^2*b^5*c^6 + \\
& 82*a^2*b^6*c^5 + 6*a^2*b^7*c^4 + 8*a^2*b^8*c^3 - 44*a^2*b^9*c^2 - 16*a^3*b^ \\
& 2*c^8 - 40*a^3*b^3*c^7 - 104*a^3*b^4*c^6 - 132*a^3*b^5*c^5 + 34*a^3*b^6*c^4 \\
& + 72*a^3*b^7*c^3 + 460*a^3*b^8*c^2 + 82*a^4*b^2*c^7 + 174*a^4*b^3*c^6 + 41 \\
& *a^4*b^4*c^5 - 149*a^4*b^5*c^4 - 660*a^4*b^6*c^3 - 900*a^4*b^7*c^2 - 90*a^5 \\
& *b^2*c^6 + 96*a^5*b^3*c^5 + 541*a^5*b^4*c^4 + 1156*a^5*b^5*c^3 + 764*a^5*b^ \\
& 6*c^2 - 204*a^6*b^2*c^5 - 704*a^6*b^3*c^4 - 840*a^6*b^4*c^3 - 300*a^6*b^5*c \\
& ^2 + 384*a^7*b^2*c^4 + 272*a^7*b^3*c^3 + 44*a^7*b^4*c^2 - 32*a^8*b^2*c^3 + \\
& 24*a*b^{11}*c))/c^8)*(-(a^2*b^8 - b^{10} + 8*a^5*c^5 + 8*a^6*c^4 - b^7*(-(4*a*c \\
& - b^2)^3)^{(1/2)} - 10*a^3*b^6*c + a^2*b^5*(-(4*a*c - b^2)^3)^{(1/2)} - 52*a^2 \\
& *b^6*c^2 + 96*a^3*b^4*c^3 - 66*a^4*b^2*c^4 + 33*a^4*b^4*c^2 - 38*a^5*b^2*c^ \\
& 3 + 12*a*b^8*c + 4*a^3*b*c^3*(-(4*a*c - b^2)^3)^{(1/2)} - 4*a^3*b^3*c*(-(4*a* \\
& c - b^2)^3)^{(1/2)} + 3*a^4*b*c^2*(-(4*a*c - b^2)^3)^{(1/2)} - 10*a^2*b^3*c^2*( \\
& -(4*a*c - b^2)^3)^{(1/2)} + 6*a*b^5*c*(-(4*a*c - b^2)^3)^{(1/2)))/(2*(16*a^2*c^ \\
& 10 + 32*a^3*c^9 + 16*a^4*c^8 + b^4*c^8 - b^6*c^6 - 8*a*b^2*c^9 + 10*a*b^4*c \\
& ^7 - 32*a^2*b^2*c^8 + a^2*b^4*c^6 - 8*a^3*b^2*c^7)))^{(1/2)}*1i - (((2048*(12 \\
& *a^3*c^{11} - 28*a^4*c^{10} - 44*a^5*c^9 + 72*a^6*c^8 + 88*a^7*c^7 + 12*a^8*c^6 \\
& + b^5*c^9 - 4*b^6*c^8 + 10*b^7*c^7 - 20*b^8*c^6 + 29*b^9*c^5 - 30*b^{10}*c^4 \\
& + 26*b^{11}*c^3 - 12*b^{12}*c^2 - 6*a*b^3*c^{10} + 27*a*b^4*c^9 - 72*a*b^5*c^8 + \\
& 154*a*b^6*c^7 - 238*a*b^7*c^6 + 251*a*b^8*c^5 - 228*a*b^9*c^4 + 98*a*b^{10}* \\
& c^3 + 20*a*b^{11}*c^2 + 8*a^2*b*c^{11} - 68*a^3*b*c^{10} + 112*a^4*b*c^9 + 100*a^ \\
& 5*b*c^8 - 200*a^6*b*c^7 - 96*a^7*b*c^6 - 47*a^2*b^2*c^{10} + 145*a^2*b^3*c^9 \\
& - 354*a^2*b^4*c^8 + 612*a^2*b^5*c^7 - 655*a^2*b^6*c^6 + 635*a^2*b^7*c^5 - 2 \\
& 02*a^2*b^8*c^4 - 222*a^2*b^9*c^3 + 4*a^2*b^{10}*c^2 + 239*a^3*b^2*c^9 - 524*a \\
& ^3*b^3*c^8 + 536*a^3*b^4*c^7 - 564*a^3*b^5*c^6 - 115*a^3*b^6*c^5 + 856*a^3* \\
& b^7*c^4 + 2*a^3*b^8*c^3 - 20*a^3*b^9*c^2 - 37*a^4*b^2*c^8 + 9*a^4*b^3*c^7 + \\
& 583*a^4*b^4*c^6 - 1362*a^4*b^5*c^5 - 152*a^4*b^6*c^4 + 156*a^4*b^7*c^3 + 8 \\
& *a^4*b^8*c^2 - 399*a^5*b^2*c^7 + 904*a^5*b^3*c^6 + 394*a^5*b^4*c^5 - 388*a^ \\
& 5*b^5*c^4 - 60*a^5*b^6*c^3 - 340*a^6*b^2*c^6 + 364*a^6*b^3*c^5 + 136*a^6*b^ \\
& 4*c^4 - 100*a^7*b^2*c^5))/c^8 + (((2048*(16*a^3*c^{13} - 32*a^2*c^{14} + 176*a^
\end{aligned}$$

$$\begin{aligned}
& 4c^{12} + 176a^5c^{11} + 48a^6c^{10} - 2b^4c^{12} + 6b^5c^{11} - 18b^6c^{10} \\
& + 26b^7c^9 - 12b^8c^8 + 16a*b^2c^{13} - 40a*b^3c^{12} + 122a*b^4c^{11} \\
& - 192a*b^5c^{10} + 74a*b^6c^9 + 20a*b^7c^8 + 64a^2*b*c^{13} - 144a^3*b \\
& *c^{12} - 352a^4*b*c^{11} - 144a^5*b*c^{10} - 204a^2*b^2*c^{12} + 388a^2*b^3*c^ \\
& 11 - 50a^2*b^4*c^{10} - 182a^2*b^5*c^9 + 4a^2*b^6*c^8 - 260a^3*b^2*c^{11} + \\
& 496a^3*b^3*c^{10} + 10a^3*b^4*c^9 - 20a^3*b^5*c^8 - 148a^4*b^2*c^{10} + 11 \\
& 6a^4*b^3*c^9 + 8a^4*b^4*c^8 - 44a^5*b^2*c^9)/c^8 + (2048*\tan(x/2)*(-(a^ \\
& 2*b^8 - b^{10} + 8a^5*c^5 + 8a^6*c^4 - b^7*(-(4*a*c - b^2)^3)^{(1/2)} - 10a^ \\
& 3*b^6*c + a^2*b^5*(-(4*a*c - b^2)^3)^{(1/2)} - 52a^2*b^6*c^2 + 96a^3*b^4*c^ \\
& 3 - 66a^4*b^2*c^4 + 33a^4*b^4*c^2 - 38a^5*b^2*c^3 + 12a*b^8*c + 4a^3*b \\
& *c^3*(-(4*a*c - b^2)^3)^{(1/2)} - 4a^3*b^3*c*(-(4*a*c - b^2)^3)^{(1/2)} + 3a^ \\
& 4*b*c^2*(-(4*a*c - b^2)^3)^{(1/2)} - 10a^2*b^3*c^2*(-(4*a*c - b^2)^3)^{(1/2)} \\
& + 6a*b^5*c*(-(4*a*c - b^2)^3)^{(1/2)})/(2*(16a^2*c^{10} + 32a^3*c^9 + 16a^4 \\
& *c^8 + b^4*c^8 - b^6*c^6 - 8a*b^2*c^9 + 10a*b^4*c^7 - 32a^2*b^2*c^8 + a^ \\
& 2*b^4*c^6 - 8a^3*b^2*c^7)))^{(1/2)}*(32a^2*c^{16} - 64a^2*c^{15} - 128a^3*c^{14} \\
& + 64a^4*c^{13} + 96a^5*c^{12} - 8b^2*c^{15} + 24b^3*c^{14} - 32b^4*c^{13} + 32b \\
& ^5*c^{12} - 24b^6*c^{11} + 8b^7*c^{10} + 144a*b^2*c^{14} - 200a*b^3*c^{13} + 184a \\
& *b^4*c^{12} - 56a*b^5*c^{11} - 8a*b^6*c^{10} + 288a^2*b*c^{14} + 352a^3*b*c^{13} \\
& - 32a^4*b*c^{12} - 320a^2*b^2*c^{13} + 8a^2*b^3*c^{12} + 96a^2*b^4*c^{11} - 8a \\
& ^2*b^5*c^{10} - 272a^3*b^2*c^{12} + 40a^3*b^3*c^{11} + 8a^3*b^4*c^{10} - 56a^4 \\
& *b^2*c^{11} - 96a*b*c^{15))/c^8)*(-(a^2*b^8 - b^{10} + 8a^5*c^5 + 8a^6*c^4 - \\
& b^7*(-(4*a*c - b^2)^3)^{(1/2)} - 10a^3*b^6*c + a^2*b^5*(-(4*a*c - b^2)^3)^{(1 \\
& /2)} - 52a^2*b^6*c^2 + 96a^3*b^4*c^3 - 66a^4*b^2*c^4 + 33a^4*b^4*c^2 - 3 \\
& 8a^5*b^2*c^3 + 12a*b^8*c + 4a^3*b*c^3*(-(4*a*c - b^2)^3)^{(1/2)} - 4a^3*b \\
& ^3*c*(-(4*a*c - b^2)^3)^{(1/2)} + 3a^4*b*c^2*(-(4*a*c - b^2)^3)^{(1/2)} - 10a \\
& ^2*b^3*c^2*(-(4*a*c - b^2)^3)^{(1/2)} + 6a*b^5*c*(-(4*a*c - b^2)^3)^{(1/2)})/( \\
& 2*(16a^2*c^{10} + 32a^3*c^9 + 16a^4*c^8 + b^4*c^8 - b^6*c^6 - 8a*b^2*c^9 \\
& + 10a*b^4*c^7 - 32a^2*b^2*c^8 + a^2*b^4*c^6 - 8a^3*b^2*c^7)))^{(1/2)} + (2 \\
& 048*\tan(x/2)*(8a^2*c^{14} - 64a^2*c^{13} + 80a^3*c^{12} + 168a^4*c^{11} - 192a^5 \\
& *c^{10} - 136a^6*c^9 + 72a^7*c^8 - 2b^2*c^{13} + 6b^3*c^{12} - 17b^4*c^{11} + \\
& 33b^5*c^{10} - 49b^6*c^9 + 61b^7*c^8 - 52b^8*c^7 + 36b^9*c^6 - 24b^{10}*c \\
& ^5 + 8b^{11}*c^4 + 84a*b^2*c^{12} - 178a*b^3*c^{11} + 295a*b^4*c^{10} - 416a*b \\
& ^5*c^9 + 375a*b^6*c^8 - 308a*b^7*c^7 + 244a*b^8*c^6 - 72a*b^9*c^5 - 8a \\
& *b^{10}*c^4 + 184a^2*b*c^{12} - 328a^3*b*c^{11} - 16a^4*b*c^{10} + 496a^5*b*c^9 \\
& - 88a^6*b*c^8 - 416a^2*b^2*c^{11} + 770a^2*b^3*c^{10} - 723a^2*b^4*c^9 + 7 \\
& 79a^2*b^5*c^8 - 732a^2*b^6*c^7 + 80a^2*b^7*c^6 + 112a^2*b^8*c^5 - 8a^2 \\
& *b^9*c^4 + 180a^3*b^2*c^{10} - 494a^3*b^3*c^9 + 521a^3*b^4*c^8 + 572a^3*b \\
& ^5*c^7 - 424a^3*b^6*c^6 + 56a^3*b^7*c^5 + 8a^3*b^8*c^4 + 234a^4*b^2*c^9 \\
& - 1152a^4*b^3*c^8 + 416a^4*b^4*c^7 - 140a^4*b^5*c^6 - 72a^4*b^6*c^5 + \\
& 64a^5*b^2*c^8 + 192a^5*b^3*c^7 + 220a^5*b^4*c^6 - 256a^6*b^2*c^7 - 24a \\
& *b*c^{13))/c^8)*(-(a^2*b^8 - b^{10} + 8a^5*c^5 + 8a^6*c^4 - b^7*(-(4*a*c - b \\
& ^2)^3)^{(1/2)} - 10a^3*b^6*c + a^2*b^5*(-(4*a*c - b^2)^3)^{(1/2)} - 52a^2*b^6 \\
& *c^2 + 96a^3*b^4*c^3 - 66a^4*b^2*c^4 + 33a^4*b^4*c^2 - 38a^5*b^2*c^3 + \\
& 12a*b^8*c + 4a^3*b*c^3*(-(4*a*c - b^2)^3)^{(1/2)} - 4a^3*b^3*c*(-(4*a*c - \\
& b^2)^3)^{(1/2)} + 3a^4*b*c^2*(-(4*a*c - b^2)^3)^{(1/2)} - 10a^2*b^3*c^2*(-(4*
\end{aligned}$$

$$\begin{aligned}
& a*c - b^2)^3)^{(1/2)} + 6*a*b^5*c*(-(4*a*c - b^2)^3)^{(1/2)})/(2*(16*a^2*c^10 + \\
& 32*a^3*c^9 + 16*a^4*c^8 + b^4*c^8 - b^6*c^6 - 8*a*b^2*c^9 + 10*a*b^4*c^7 - \\
& 32*a^2*b^2*c^8 + a^2*b^4*c^6 - 8*a^3*b^2*c^7)))^{(1/2))*(-(a^2*b^8 - b^10 + \\
& 8*a^5*c^5 + 8*a^6*c^4 - b^7*(-(4*a*c - b^2)^3)^{(1/2)} - 10*a^3*b^6*c + a^2* \\
& b^5*(-(4*a*c - b^2)^3)^{(1/2)} - 52*a^2*b^6*c^2 + 96*a^3*b^4*c^3 - 66*a^4*b^2 \\
& *c^4 + 33*a^4*b^4*c^2 - 38*a^5*b^2*c^3 + 12*a*b^8*c + 4*a^3*b*c^3*(-(4*a*c \\
& - b^2)^3)^{(1/2)} - 4*a^3*b^3*c*(-(4*a*c - b^2)^3)^{(1/2)} + 3*a^4*b*c^2*(-(4*a \\
& *c - b^2)^3)^{(1/2)} - 10*a^2*b^3*c^2*(-(4*a*c - b^2)^3)^{(1/2)} + 6*a*b^5*c*(- \\
& (4*a*c - b^2)^3)^{(1/2)})/(2*(16*a^2*c^10 + 32*a^3*c^9 + 16*a^4*c^8 + b^4*c^8 \\
& - b^6*c^6 - 8*a*b^2*c^9 + 10*a*b^4*c^7 - 32*a^2*b^2*c^8 + a^2*b^4*c^6 - 8* \\
& a^3*b^2*c^7)))^{(1/2)} + (2048*\tan(x/2)*(20*a*b^12 + 4*b^12*c - 4*b^13 - 40*a \\
& ^2*b^11 + 40*a^3*b^10 - 20*a^4*b^9 + 4*a^5*b^8 + 2*a^4*c^9 - 18*a^5*c^8 + 3 \\
& 8*a^6*c^7 + 2*a^7*c^6 - 44*a^8*c^5 + 12*a^9*c^4 + b^8*c^5 - b^9*c^4 + 4*b^1 \\
& 0*c^3 - 4*b^11*c^2 - 8*a*b^6*c^6 + 4*a*b^7*c^5 - 31*a*b^8*c^4 + 20*a*b^9*c^ \\
& 3 - 20*a*b^10*c^2 - 160*a^2*b^10*c + 320*a^3*b^9*c + 26*a^4*b*c^8 - 300*a^4 \\
& *b^8*c - 84*a^5*b*c^7 + 136*a^5*b^7*c + 2*a^6*b*c^6 - 24*a^6*b^6*c + 168*a^ \\
& 7*b*c^5 - 92*a^8*b*c^4 + 20*a^2*b^4*c^7 + 8*a^2*b^5*c^6 + 82*a^2*b^6*c^5 + \\
& 6*a^2*b^7*c^4 + 8*a^2*b^8*c^3 - 44*a^2*b^9*c^2 - 16*a^3*b^2*c^8 - 40*a^3*b^ \\
& 3*c^7 - 104*a^3*b^4*c^6 - 132*a^3*b^5*c^5 + 34*a^3*b^6*c^4 + 72*a^3*b^7*c^3 \\
& + 460*a^3*b^8*c^2 + 82*a^4*b^2*c^7 + 174*a^4*b^3*c^6 + 41*a^4*b^4*c^5 - 14 \\
& 9*a^4*b^5*c^4 - 660*a^4*b^6*c^3 - 900*a^4*b^7*c^2 - 90*a^5*b^2*c^6 + 96*a^5 \\
& *b^3*c^5 + 541*a^5*b^4*c^4 + 1156*a^5*b^5*c^3 + 764*a^5*b^6*c^2 - 204*a^6*b \\
& ^2*c^5 - 704*a^6*b^3*c^4 - 840*a^6*b^4*c^3 - 300*a^6*b^5*c^2 + 384*a^7*b^2* \\
& c^4 + 272*a^7*b^3*c^3 + 44*a^7*b^4*c^2 - 32*a^8*b^2*c^3 + 24*a*b^11*c))/c^8 \\
& )*(-(a^2*b^8 - b^10 + 8*a^5*c^5 + 8*a^6*c^4 - b^7*(-(4*a*c - b^2)^3)^{(1/2)} \\
& - 10*a^3*b^6*c + a^2*b^5*(-(4*a*c - b^2)^3)^{(1/2)} - 52*a^2*b^6*c^2 + 96*a^3 \\
& *b^4*c^3 - 66*a^4*b^2*c^4 + 33*a^4*b^4*c^2 - 38*a^5*b^2*c^3 + 12*a*b^8*c + \\
& 4*a^3*b*c^3*(-(4*a*c - b^2)^3)^{(1/2)} - 4*a^3*b^3*c*(-(4*a*c - b^2)^3)^{(1/2)} \\
& + 3*a^4*b*c^2*(-(4*a*c - b^2)^3)^{(1/2)} - 10*a^2*b^3*c^2*(-(4*a*c - b^2)^3) \\
& ^{(1/2)} + 6*a*b^5*c*(-(4*a*c - b^2)^3)^{(1/2)})/(2*(16*a^2*c^10 + 32*a^3*c^9 + \\
& 16*a^4*c^8 + b^4*c^8 - b^6*c^6 - 8*a*b^2*c^9 + 10*a*b^4*c^7 - 32*a^2*b^2*c \\
& ^8 + a^2*b^4*c^6 - 8*a^3*b^2*c^7)))^{(1/2)}*i)/((4096*(16*a^5*b^7 - 4*a^4*b^ \\
& 8 - 24*a^6*b^6 + 16*a^7*b^5 - 4*a^8*b^4 + 3*a^6*c^6 - 10*a^7*c^5 + a^8*c^4 \\
& + 14*a^9*c^3 + 4*a^4*b^7*c - 2*a^5*b*c^6 + 4*a^5*b^6*c + 6*a^6*b*c^5 - 40*a \\
& ^6*b^5*c + 4*a^7*b*c^4 + 56*a^7*b^4*c - 22*a^8*b*c^3 - 28*a^8*b^3*c + 12*a^ \\
& 9*b*c^2 + 4*a^9*b^2*c + a^4*b^3*c^5 - a^4*b^4*c^4 + 4*a^4*b^5*c^3 - 4*a^4*b \\
& ^6*c^2 - a^5*b^2*c^5 - 8*a^5*b^3*c^4 + 10*a^6*b^2*c^4 - 4*a^6*b^3*c^3 - 8*a \\
& ^6*b^4*c^2 + 4*a^7*b^2*c^3 + 48*a^7*b^3*c^2 - 48*a^8*b^2*c^2))/c^8 + (((204 \\
& 8*(12*a^3*c^11 - 28*a^4*c^10 - 44*a^5*c^9 + 72*a^6*c^8 + 88*a^7*c^7 + 12*a^ \\
& 8*c^6 + b^5*c^9 - 4*b^6*c^8 + 10*b^7*c^7 - 20*b^8*c^6 + 29*b^9*c^5 - 30*b^1 \\
& 0*c^4 + 26*b^11*c^3 - 12*b^12*c^2 - 6*a*b^3*c^10 + 27*a*b^4*c^9 - 72*a*b^5* \\
& c^8 + 154*a*b^6*c^7 - 238*a*b^7*c^6 + 251*a*b^8*c^5 - 228*a*b^9*c^4 + 98*a* \\
& b^10*c^3 + 20*a*b^11*c^2 + 8*a^2*b*c^11 - 68*a^3*b*c^10 + 112*a^4*b*c^9 + 1 \\
& 00*a^5*b*c^8 - 200*a^6*b*c^7 - 96*a^7*b*c^6 - 47*a^2*b^2*c^10 + 145*a^2*b^3 \\
& *c^9 - 354*a^2*b^4*c^8 + 612*a^2*b^5*c^7 - 655*a^2*b^6*c^6 + 635*a^2*b^7*c^
\end{aligned}$$

$$\begin{aligned}
& 5 - 202a^2b^8c^4 - 222a^2b^9c^3 + 4a^2b^{10}c^2 + 239a^3b^2c^9 - \\
& 524a^3b^3c^8 + 536a^3b^4c^7 - 564a^3b^5c^6 - 115a^3b^6c^5 + 856 \\
& a^3b^7c^4 + 2a^3b^8c^3 - 20a^3b^9c^2 - 37a^4b^2c^8 + 9a^4b^3c^7 + 583a^4b^4c^6 \\
& - 1362a^4b^5c^5 - 152a^4b^6c^4 + 156a^4b^7c^3 + 8a^4b^8c^2 - 399a^5b^2c^7 \\
& + 904a^5b^3c^6 + 394a^5b^4c^5 - 388a^5b^5c^4 - 60a^5b^6c^3 - 340a^6b^2c^6 \\
& + 364a^6b^3c^5 + 136a^6b^4c^4 - 100a^7b^2c^5)/c^8 + (((2048*(16a^3c^{13} - 32a^2c^{14} + 1 \\
& 76a^4c^{12} + 176a^5c^{11} + 48a^6c^{10} - 2b^4c^{12} + 6b^5c^{11} - 18b^6 \\
& c^{10} + 26b^7c^9 - 12b^8c^8 + 16a*b^2c^{13} - 40a*b^3c^{12} + 122a*b^4 \\
& c^{11} - 192a*b^5c^{10} + 74a*b^6c^9 + 20a*b^7c^8 + 64a^2b*c^{13} - 144a^3b*c^{12} \\
& - 352a^4b*c^{11} - 144a^5b*c^{10} - 204a^2b^2c^{12} + 388a^2b^3c^{11} - 50a^2b^4c^{10} \\
& - 182a^2b^5c^9 + 4a^2b^6c^8 - 260a^3b^2c^{11} + 496a^3b^3c^{10} + 10a^3b^4c^9 \\
& - 20a^3b^5c^8 - 148a^4b^2c^{10} + 116a^4b^3c^9 + 8a^4b^4c^8 - 44a^5b^2c^9))/c^8 - (2048*\tan(x/2)* \\
& (-a^2b^8 - b^{10} + 8a^5c^5 + 8a^6c^4 - b^7*(-(4a*c - b^2)^3)^{(1/2)} - \\
& 10a^3b^6c + a^2b^5*(-(4a*c - b^2)^3)^{(1/2)} - 52a^2b^6c^2 + 96a^3b^4c^3 \\
& - 66a^4b^2c^4 + 33a^4b^4c^2 - 38a^5b^2c^3 + 12a*b^8c + 4a^3b*c^3*(-(4a*c - b^2)^3)^{(1/2)} \\
& - 4a^3b^3c*(-(4a*c - b^2)^3)^{(1/2)} + 3a^4b*c^2*(-(4a*c - b^2)^3)^{(1/2)} - 10a^2b^3c^2*(-(4a*c - b^2)^3)^{(1/2)} \\
& + 6a*b^5c*(-(4a*c - b^2)^3)^{(1/2)))/(2*(16a^2c^{10} + 32a^3c^9 + 16a^4c^8 + b^4c^8 - b^6c^6 \\
& - 8a*b^2c^9 + 10a*b^4c^7 - 32a^2b^2c^8 + a^2b^4c^6 - 8a^3b^2c^7)))^{(1/2)}*(32a^c^{16} - 64a^2c^{15} - 128a^3c^{14} \\
& + 64a^4c^{13} + 96a^5c^{12} - 8b^2c^{15} + 24b^3c^{14} - 32b^4c^{13} + 32b^5c^{12} - 24b^6c^{11} \\
& + 8b^7c^{10} + 144a*b^2c^{14} - 200a*b^3c^{13} + 184a*b^4c^{12} - 56a*b^5c^{11} - 8a*b^6c^{10} \\
& + 288a^2b*c^{14} + 352a^3b*c^{13} - 32a^4b*c^{12} - 320a^2b^2c^{13} + 8a^2b^3c^{12} + 96a^2b^4c^{11} \\
& - 8a^2b^5c^{10} - 272a^3b^2c^{12} + 40a^3b^3c^{11} + 8a^3b^4c^{10} - 56a^4b^2c^{11} - 96a*b*c^{15}))/c^8)*(-a^2b^8 - b^{10} + 8a^5c^5 + 8a^6c^4 \\
& - b^7*(-(4a*c - b^2)^3)^{(1/2)} - 10a^3b^6c + a^2b^5*(-(4a*c - b^2)^3)^{(1/2)} - 52a^2b^6c^2 \\
& + 96a^3b^4c^3 - 66a^4b^2c^4 + 33a^4b^4c^2 - 38a^5b^2c^3 + 12a*b^8c + 4a^3b*c^3*(-(4a*c - b^2)^3)^{(1/2)} \\
& - 4a^3b^3c*(-(4a*c - b^2)^3)^{(1/2)} + 3a^4b*c^2*(-(4a*c - b^2)^3)^{(1/2)} - 10a^2b^3c^2*(-(4a*c - b^2)^3)^{(1/2)} \\
& + 6a*b^5c*(-(4a*c - b^2)^3)^{(1/2)))/(2*(16a^2c^{10} + 32a^3c^9 + 16a^4c^8 + b^4c^8 - b^6c^6 - 8a*b^2 \\
& c^9 + 10a*b^4c^7 - 32a^2b^2c^8 + a^2b^4c^6 - 8a^3b^2c^7)))^{(1/2)} - (2048*\tan(x/2)*(8a^c^{14} - 64a^2c^{13} + 80a^3c^{12} + 168a^4c^{11} - 19 \\
& 2a^5c^{10} - 136a^6c^9 + 72a^7c^8 - 2b^2c^{13} + 6b^3c^{12} - 17b^4c^{11} + 33b^5c^{10} - 49b^6c^9 \\
& + 61b^7c^8 - 52b^8c^7 + 36b^9c^6 - 24b^{10}c^5 + 8b^{11}c^4 + 84a*b^2c^{12} - 178a*b^3c^{11} + 295a*b^4c^{10} - 41 \\
& 6a*b^5c^9 + 375a*b^6c^8 - 308a*b^7c^7 + 244a*b^8c^6 - 72a*b^9c^5 - 8a*b^{10}c^4 + 184a^2b*c^{12} \\
& - 328a^3b*c^{11} - 16a^4b*c^{10} + 496a^5b*c^9 - 88a^6b*c^8 - 416a^2b^2c^{11} + 770a^2b^3c^{10} - 723a^2b^4c^9 \\
& + 779a^2b^5c^8 - 732a^2b^6c^7 + 80a^2b^7c^6 + 112a^2b^8c^5 - 8a^2b^9c^4 + 180a^3b^2c^{10} \\
& - 494a^3b^3c^9 + 521a^3b^4c^8 + 572a^3b^5c^7 - 424a^3b^6c^6 + 56a^3b^7c^5 + 8a^3b^8c^4 + 234a^4b^
\end{aligned}$$

$$\begin{aligned}
& 2c^9 - 1152a^4b^3c^8 + 416a^4b^4c^7 - 140a^4b^5c^6 - 72a^4b^6c^5 + 64a^5b^2c^8 + 192a^5b^3c^7 + 220a^5b^4c^6 - 256a^6b^2c^7 - \\
& 24a^6b^3c^6) / c^8) * (- (a^2b^8 - b^{10} + 8a^5c^5 + 8a^6c^4 - b^7 * (- (4ac - b^2)^3)^{1/2} - 10a^3b^6c + a^2b^5 * (- (4ac - b^2)^3)^{1/2} - 52a^2b^6c^2 + 96a^3b^4c^3 - 66a^4b^2c^4 + 33a^4b^4c^2 - 38a^5b^2c^3 + 12a^6b^8c + 4a^3b^3c^3 * (- (4ac - b^2)^3)^{1/2} - 4a^3b^3c * (- (4ac - b^2)^3)^{1/2} + 3a^4b^3c^2 * (- (4ac - b^2)^3)^{1/2} - 10a^2b^3c^2 * (- (4ac - b^2)^3)^{1/2} + 6a^5b^5c * (- (4ac - b^2)^3)^{1/2} / (2 * (16a^2c^{10} + 32a^3c^9 + 16a^4c^8 + b^4c^8 - b^6c^6 - 8ab^2c^9 + 10ab^4c^7 - 32a^2b^2c^8 + a^2b^4c^6 - 8a^3b^2c^7)))^{1/2}) * (- (a^2b^8 - b^{10} + 8a^5c^5 + 8a^6c^4 - b^7 * (- (4ac - b^2)^3)^{1/2} - 10a^3b^6c + a^2b^5 * (- (4ac - b^2)^3)^{1/2} - 52a^2b^6c^2 + 96a^3b^4c^3 - 66a^4b^2c^4 + 33a^4b^4c^2 - 38a^5b^2c^3 + 12a^6b^8c + 4a^3b^3c^3 * (- (4ac - b^2)^3)^{1/2} - 4a^3b^3c * (- (4ac - b^2)^3)^{1/2} + 3a^4b^3c^2 * (- (4ac - b^2)^3)^{1/2} - 10a^2b^3c^2 * (- (4ac - b^2)^3)^{1/2} + 6a^5b^5c * (- (4ac - b^2)^3)^{1/2} / (2 * (16a^2c^{10} + 32a^3c^9 + 16a^4c^8 + b^4c^8 - b^6c^6 - 8ab^2c^9 + 10ab^4c^7 - 32a^2b^2c^8 + a^2b^4c^6 - 8a^3b^2c^7)))^{1/2} - (2048 * \tan(x/2) * (20ab^{12} + 4b^{12}c - 4b^{13} - 40a^2b^{11} + 40a^3b^{10} - 20a^4b^9 + 4a^5b^8 + 2a^4c^9 - 18a^5c^8 + 38a^6c^7 + 2a^7c^6 - 44a^8c^5 + 12a^9c^4 + b^8c^5 - b^9c^4 + 4b^{10}c^3 - 4b^{11}c^2 - 8ab^6c^6 + 4ab^7c^5 - 31ab^8c^4 + 20ab^9c^3 - 20ab^{10}c^2 - 160a^2b^{10}c + 320a^3b^9c + 26a^4b^8c - 300a^4b^8c - 84a^5b^7c + 136a^5b^7c + 2a^6b^6c^6 - 24a^6b^6c + 168a^7b^5c^5 - 92a^8b^4c^4 + 20a^2b^4c^7 + 8a^2b^5c^6 + 82a^2b^6c^5 + 6a^2b^7c^4 + 8a^2b^8c^3 - 44a^2b^9c^2 - 16a^3b^2c^8 - 40a^3b^3c^7 - 104a^3b^4c^6 - 132a^3b^5c^5 + 34a^3b^6c^4 + 72a^3b^7c^3 + 460a^3b^8c^2 + 82a^4b^2c^7 + 174a^4b^3c^6 + 41a^4b^4c^5 - 149a^4b^5c^4 - 660a^4b^6c^3 - 900a^4b^7c^2 - 90a^5b^2c^6 + 96a^5b^3c^5 + 541a^5b^4c^4 + 1156a^5b^5c^3 + 764a^5b^6c^2 - 204a^6b^2c^5 - 704a^6b^3c^4 - 840a^6b^4c^3 - 300a^6b^5c^2 + 384a^7b^2c^4 + 272a^7b^3c^3 + 44a^7b^4c^2 - 32a^8b^2c^3 + 24ab^{11}c) / c^8) * (- (a^2b^8 - b^{10} + 8a^5c^5 + 8a^6c^4 - b^7 * (- (4ac - b^2)^3)^{1/2} - 10a^3b^6c + a^2b^5 * (- (4ac - b^2)^3)^{1/2} - 52a^2b^6c^2 + 96a^3b^4c^3 - 66a^4b^2c^4 + 33a^4b^4c^2 - 38a^5b^2c^3 + 12a^6b^8c + 4a^3b^3c^3 * (- (4ac - b^2)^3)^{1/2} - 4a^3b^3c * (- (4ac - b^2)^3)^{1/2} + 3a^4b^3c^2 * (- (4ac - b^2)^3)^{1/2} - 10a^2b^3c^2 * (- (4ac - b^2)^3)^{1/2} + 6a^5b^5c * (- (4ac - b^2)^3)^{1/2} / (2 * (16a^2c^{10} + 32a^3c^9 + 16a^4c^8 + b^4c^8 - b^6c^6 - 8ab^2c^9 + 10ab^4c^7 - 32a^2b^2c^8 + a^2b^4c^6 - 8a^3b^2c^7)))^{1/2} + (((2048 * (12a^3c^{11} - 28a^4c^{10} - 44a^5c^9 + 72a^6c^8 + 88a^7c^7 + 12a^8c^6 + b^5c^9 - 4b^6c^8 + 10b^7c^7 - 20b^8c^6 + 29b^9c^5 - 30b^{10}c^4 + 26b^{11}c^3 - 12b^{12}c^2 - 6ab^3c^{10} + 27ab^4c^9 - 72ab^5c^8 + 154ab^6c^7 - 238ab^7c^6 + 251ab^8c^5 - 228ab^9c^4 + 98ab^{10}c^3 + 20ab^{11}c^2 + 8a^2b^3c^{11} - 68a^3b^3c^{10} + 112a^4b^3c^9 + 100a^5b^3c^8 - 200a^6b^3c^7 - 96a^7b^3c^6 - 47a^2b^2c^{10} + 145a^2b^3c^9 - 354a^2b^4c
\end{aligned}$$



$$\begin{aligned}
& ^8 + 612a^2b^5c^7 - 655a^2b^6c^6 + 635a^2b^7c^5 - 202a^2b^8c^4 \\
& - 222a^2b^9c^3 + 4a^2b^{10}c^2 + 239a^3b^2c^9 - 524a^3b^3c^8 + 53 \\
& 6a^3b^4c^7 - 564a^3b^5c^6 - 115a^3b^6c^5 + 856a^3b^7c^4 + 2a^3 \\
& *b^8c^3 - 20a^3b^9c^2 - 37a^4b^2c^8 + 9a^4b^3c^7 + 583a^4b^4c^ \\
& 6 - 1362a^4b^5c^5 - 152a^4b^6c^4 + 156a^4b^7c^3 + 8a^4b^8c^2 - \\
& 399a^5b^2c^7 + 904a^5b^3c^6 + 394a^5b^4c^5 - 388a^5b^5c^4 - 60* \\
& a^5b^6c^3 - 340a^6b^2c^6 + 364a^6b^3c^5 + 136a^6b^4c^4 - 100a^7 \\
& *b^2c^5)/c^8 + (((2048*(16a^3c^{13} - 32a^2c^{14} + 176a^4c^{12} + 176a^ \\
& 5c^{11} + 48a^6c^{10} - 2b^4c^{12} + 6b^5c^{11} - 18b^6c^{10} + 26b^7c^9 - \\
& 12b^8c^8 + 16a*b^2c^{13} - 40a*b^3c^{12} + 122a*b^4c^{11} - 192a*b^5c^ \\
& 10 + 74a*b^6c^9 + 20a*b^7c^8 + 64a^2b*c^{13} - 144a^3b*c^{12} - 352a^4 \\
& *b*c^{11} - 144a^5b*c^{10} - 204a^2b^2c^{12} + 388a^2b^3c^{11} - 50a^2b^4 \\
& *c^{10} - 182a^2b^5c^9 + 4a^2b^6c^8 - 260a^3b^2c^{11} + 496a^3b^3c^ \\
& 10 + 10a^3b^4c^9 - 20a^3b^5c^8 - 148a^4b^2c^{10} + 116a^4b^3c^9 + \\
& 8a^4b^4c^8 - 44a^5b^2c^9))/c^8 + (2048*\tan(x/2)*(-(a^2b^8 - b^{10} + \\
& 8a^5c^5 + 8a^6c^4 - b^7*(-(4a*c - b^2)^3)^{(1/2)} - 10a^3b^6c + a^2b \\
& ^5*(-(4a*c - b^2)^3)^{(1/2)} - 52a^2b^6c^2 + 96a^3b^4c^3 - 66a^4b^2* \\
& c^4 + 33a^4b^4c^2 - 38a^5b^2c^3 + 12a*b^8c + 4a^3b*c^3*(-(4a*c - \\
& b^2)^3)^{(1/2)} - 4a^3b^3c*(-(4a*c - b^2)^3)^{(1/2)} + 3a^4b*c^2*(-(4a* \\
& c - b^2)^3)^{(1/2)} - 10a^2b^3c^2*(-(4a*c - b^2)^3)^{(1/2)} + 6a*b^5c*(-( \\
& 4a*c - b^2)^3)^{(1/2)))/(2*(16a^2c^{10} + 32a^3c^9 + 16a^4c^8 + b^4c^8 \\
& - b^6c^6 - 8a*b^2c^9 + 10a*b^4c^7 - 32a^2b^2c^8 + a^2b^4c^6 - 8a \\
& ^3b^2c^7)))^{(1/2)}*(32a*c^{16} - 64a^2c^{15} - 128a^3c^{14} + 64a^4c^{13} + \\
& 96a^5c^{12} - 8b^2c^{15} + 24b^3c^{14} - 32b^4c^{13} + 32b^5c^{12} - 24b^ \\
& 6c^{11} + 8b^7c^{10} + 144a*b^2c^{14} - 200a*b^3c^{13} + 184a*b^4c^{12} - 56 \\
& *a*b^5c^{11} - 8a*b^6c^{10} + 288a^2b*c^{14} + 352a^3b*c^{13} - 32a^4b*c^{1} \\
& 2 - 320a^2b^2c^{13} + 8a^2b^3c^{12} + 96a^2b^4c^{11} - 8a^2b^5c^{10} - \\
& 272a^3b^2c^{12} + 40a^3b^3c^{11} + 8a^3b^4c^{10} - 56a^4b^2c^{11} - 96* \\
& a*b*c^{15))/c^8)*(-(a^2b^8 - b^{10} + 8a^5c^5 + 8a^6c^4 - b^7*(-(4a*c - \\
& b^2)^3)^{(1/2)} - 10a^3b^6c + a^2b^5*(-(4a*c - b^2)^3)^{(1/2)} - 52a^2b^ \\
& 6c^2 + 96a^3b^4c^3 - 66a^4b^2c^4 + 33a^4b^4c^2 - 38a^5b^2c^3 + \\
& 12a*b^8c + 4a^3b*c^3*(-(4a*c - b^2)^3)^{(1/2)} - 4a^3b^3c*(-(4a*c - \\
& b^2)^3)^{(1/2)} + 3a^4b*c^2*(-(4a*c - b^2)^3)^{(1/2)} - 10a^2b^3c^2*(-(4 \\
& *a*c - b^2)^3)^{(1/2)} + 6a*b^5c*(-(4a*c - b^2)^3)^{(1/2)))/(2*(16a^2c^{10} \\
& + 32a^3c^9 + 16a^4c^8 + b^4c^8 - b^6c^6 - 8a*b^2c^9 + 10a*b^4c^7 \\
& - 32a^2b^2c^8 + a^2b^4c^6 - 8a^3b^2c^7)))^{(1/2)} + (2048*\tan(x/2)*(8 \\
& *a*c^{14} - 64a^2c^{13} + 80a^3c^{12} + 168a^4c^{11} - 192a^5c^{10} - 136a^6 \\
& *c^9 + 72a^7c^8 - 2b^2c^{13} + 6b^3c^{12} - 17b^4c^{11} + 33b^5c^{10} - 4 \\
& 9b^6c^9 + 61b^7c^8 - 52b^8c^7 + 36b^9c^6 - 24b^{10}c^5 + 8b^{11}c^4 \\
& + 84a*b^2c^{12} - 178a*b^3c^{11} + 295a*b^4c^{10} - 416a*b^5c^9 + 375a* \\
& b^6c^8 - 308a*b^7c^7 + 244a*b^8c^6 - 72a*b^9c^5 - 8a*b^{10}c^4 + 184 \\
& *a^2b*c^{12} - 328a^3b*c^{11} - 16a^4b*c^{10} + 496a^5b*c^9 - 88a^6b*c^8 \\
& - 416a^2b^2c^{11} + 770a^2b^3c^{10} - 723a^2b^4c^9 + 779a^2b^5c^8 \\
& - 732a^2b^6c^7 + 80a^2b^7c^6 + 112a^2b^8c^5 - 8a^2b^9c^4 + 180* \\
& a^3b^2c^{10} - 494a^3b^3c^9 + 521a^3b^4c^8 + 572a^3b^5c^7 - 424a^
\end{aligned}$$

$$\begin{aligned}
& 3*b^6*c^6 + 56*a^3*b^7*c^5 + 8*a^3*b^8*c^4 + 234*a^4*b^2*c^9 - 1152*a^4*b^3*c^8 \\
& + 416*a^4*b^4*c^7 - 140*a^4*b^5*c^6 - 72*a^4*b^6*c^5 + 64*a^5*b^2*c^8 \\
& + 192*a^5*b^3*c^7 + 220*a^5*b^4*c^6 - 256*a^6*b^2*c^7 - 24*a*b*c^{13})/c^8)* \\
& (-a^2*b^8 - b^{10} + 8*a^5*c^5 + 8*a^6*c^4 - b^7*(-(4*a*c - b^2)^3)^{(1/2)} - \\
& 10*a^3*b^6*c + a^2*b^5*(-(4*a*c - b^2)^3)^{(1/2)} - 52*a^2*b^6*c^2 + 96*a^3*b^4*c^3 - 66*a^4*b^2*c^4 \\
& + 33*a^4*b^4*c^2 - 38*a^5*b^2*c^3 + 12*a*b^8*c + 4*a^3*b*c^3*(-(4*a*c - b^2)^3)^{(1/2)} - 4*a^3*b^3*c*(-(4*a*c - b^2)^3)^{(1/2)} + \\
& 3*a^4*b*c^2*(-(4*a*c - b^2)^3)^{(1/2)} - 10*a^2*b^3*c^2*(-(4*a*c - b^2)^3)^{(1/2)} + 6*a*b^5*c*(-(4*a*c - b^2)^3)^{(1/2)})/(2*(16*a^2*c^{10} + 32*a^3*c^9 + 1 \\
& 6*a^4*c^8 + b^4*c^8 - b^6*c^6 - 8*a*b^2*c^9 + 10*a*b^4*c^7 - 32*a^2*b^2*c^8 \\
& + a^2*b^4*c^6 - 8*a^3*b^2*c^7)))^{(1/2)}*(-(a^2*b^8 - b^{10} + 8*a^5*c^5 + 8*a^6*c^4 - b^7*(-(4*a*c - b^2)^3)^{(1/2)} - 10*a^3*b^6*c \\
& + a^2*b^5*(-(4*a*c - b^2)^3)^{(1/2)} - 52*a^2*b^6*c^2 + 96*a^3*b^4*c^3 - 66*a^4*b^2*c^4 + 33*a^4*b^4*c^2 - 38*a^5*b^2*c^3 + 12*a*b^8*c + 4*a^3*b*c^3*(-(4*a*c - b^2)^3)^{(1/2)} \\
& - 4*a^3*b^3*c*(-(4*a*c - b^2)^3)^{(1/2)} + 3*a^4*b*c^2*(-(4*a*c - b^2)^3)^{(1/2)} - 10*a^2*b^3*c^2*(-(4*a*c - b^2)^3)^{(1/2)} + 6*a*b^5*c*(-(4*a*c - b^2)^3)^{(1/2)})/(2*(16*a^2*c^{10} + 32*a^3*c^9 + 16*a^4*c^8 + b^4*c^8 - b^6*c^6 - 8*a*b^2*c^9 + 10*a*b^4*c^7 - 32*a^2*b^2*c^8 + a^2*b^4*c^6 - 8*a^3*b^2*c^7)))^{(1/2)} + (2048*\tan(x/2)*(20*a*b^{12} + 4*b^{12}*c - 4*b^{13} - 40*a^2*b^{11} + 40*a^3*b^{10} - 20*a^4*b^9 + 4*a^5*b^8 + 2*a^4*c^9 - 18*a^5*c^8 + 38*a^6*c^7 + 2*a^7*c^6 - 44*a^8*c^5 + 12*a^9*c^4 + b^8*c^5 - b^9*c^4 + 4*b^{10}*c^3 - 4*b^{11}*c^2 - 8*a*b^6*c^6 + 4*a*b^7*c^5 - 31*a*b^8*c^4 + 20*a*b^9*c^3 - 20*a*b^{10}*c^2 - 160*a^2*b^{10}*c + 320*a^3*b^9*c + 26*a^4*b*c^8 - 300*a^4*b^8*c - 84*a^5*b*c^7 + 136*a^5*b^7*c + 2*a^6*b*c^6 - 24*a^6*b^6*c + 168*a^7*b*c^5 - 92*a^8*b*c^4 + 20*a^2*b^4*c^7 + 8*a^2*b^5*c^6 + 82*a^2*b^6*c^5 + 6*a^2*b^7*c^4 + 8*a^2*b^8*c^3 - 44*a^2*b^9*c^2 - 16*a^3*b^2*c^8 - 40*a^3*b^3*c^7 - 104*a^3*b^4*c^6 - 132*a^3*b^5*c^5 + 34*a^3*b^6*c^4 + 72*a^3*b^7*c^3 + 460*a^3*b^8*c^2 + 82*a^4*b^2*c^7 + 174*a^4*b^3*c^6 + 41*a^4*b^4*c^5 - 149*a^4*b^5*c^4 - 660*a^4*b^6*c^3 - 900*a^4*b^7*c^2 - 90*a^5*b^2*c^6 + 96*a^5*b^3*c^5 + 541*a^5*b^4*c^4 + 1156*a^5*b^5*c^3 + 764*a^5*b^6*c^2 - 204*a^6*b^2*c^5 - 704*a^6*b^3*c^4 - 840*a^6*b^4*c^3 - 300*a^6*b^5*c^2 + 384*a^7*b^2*c^4 + 272*a^7*b^3*c^3 + 44*a^7*b^4*c^2 - 32*a^8*b^2*c^3 + 24*a*b^{11}*c))/c^8)*(-a^2*b^8 - b^{10} + 8*a^5*c^5 + 8*a^6*c^4 - b^7*(-(4*a*c - b^2)^3)^{(1/2)} - 10*a^3*b^6*c + a^2*b^5*(-(4*a*c - b^2)^3)^{(1/2)} - 52*a^2*b^6*c^2 + 96*a^3*b^4*c^3 - 66*a^4*b^2*c^4 + 33*a^4*b^4*c^2 - 38*a^5*b^2*c^3 + 12*a*b^8*c + 4*a^3*b*c^3*(-(4*a*c - b^2)^3)^{(1/2)} - 4*a^3*b^3*c*(-(4*a*c - b^2)^3)^{(1/2)} + 3*a^4*b*c^2*(-(4*a*c - b^2)^3)^{(1/2)} - 10*a^2*b^3*c^2*(-(4*a*c - b^2)^3)^{(1/2)} + 6*a*b^5*c*(-(4*a*c - b^2)^3)^{(1/2)})/(2*(16*a^2*c^{10} + 32*a^3*c^9 + 16*a^4*c^8 + b^4*c^8 - b^6*c^6 - 8*a*b^2*c^9 + 10*a*b^4*c^7 - 32*a^2*b^2*c^8 + a^2*b^4*c^6 - 8*a^3*b^2*c^7)))^{(1/2)}*(-(a^2*b^8 - b^{10} + 8*a^5*c^5 + 8*a^6*c^4 - b^7*(-(4*a*c - b^2)^3)^{(1/2)} - 10*a^3*b^6*c + a^2*b^5*(-(4*a*c - b^2)^3)^{(1/2)} - 52*a^2*b^6*c^2 + 96*a^3*b^4*c^3 - 66*a^4*b^2*c^4 + 33*a^4*b^4*c^2 - 38*a^5*b^2*c^3 + 12*a*b^8*c + 4*a^3*b*c^3*(-(4*a*c - b^2)^3)^{(1/2)} - 4*a^3*b^3*c*(-(4*a*c - b^2)^3)^{(1/2)} + 3*a^4*b*c^2*(-(4*a*c - b^2)^3)^{(1/2)} - 10*a^2*b^3*c^2*(-(4*a*c - b^2)^3)^{(1/2)} + 6*a*b^5*c*(-(4*a*c - b^2)^3)^{(1/2)})/(2*
\end{aligned}$$

$$\begin{aligned}
& (16a^2c^{10} + 32a^3c^9 + 16a^4c^8 + b^4c^8 - b^6c^6 - 8ab^2c^9 + \\
& 10ab^4c^7 - 32a^2b^2c^8 + a^2b^4c^6 - 8a^3b^2c^7))^{(1/2)} * 2i - ( \\
& (\tan(x/2)*(2b - c))/c^2 + (\tan(x/2)^3*(2b + c))/c^2)/(2*\tan(x/2)^2 + \tan( \\
& x/2)^4 + 1) + \operatorname{atan}((((2048*(12a^3c^{11} - 28a^4c^{10} - 44a^5c^9 + 72a^6 \\
& 6c^8 + 88a^7c^7 + 12a^8c^6 + b^5c^9 - 4b^6c^8 + 10b^7c^7 - 20b^8 \\
& *c^6 + 29b^9c^5 - 30b^{10}c^4 + 26b^{11}c^3 - 12b^{12}c^2 - 6ab^3c^{10} \\
& + 27ab^4c^9 - 72a^2b^5c^8 + 154a^3b^6c^7 - 238a^4b^7c^6 + 251a^5b^8c^5 - 228a^6b^9c^4 + 98a^7b^{10}c^3 + 20a^8b^{11}c^2 + 8a^9b^{12}c \\
& b^3c^{10} + 112a^4b^2c^9 + 100a^5b^3c^8 - 200a^6b^4c^7 - 96a^7b^5c^6 - 47a^8b^6c^5 - 228a^9b^7c^4 + 98a^{10}b^8c^3 + 20a^{11}b^9c^2 + 8a^{12}b^{10}c \\
& *c^6 + 635a^2b^7c^5 - 202a^2b^8c^4 - 222a^2b^9c^3 + 4a^2b^{10}c^2 + 239a^3b^2c^9 - 524a^3b^3c^8 + 536a^3b^4c^7 - 564a^3b^5c^6 - 115a^3b^6c^5 + 856a^3b^7c^4 + 2a^3b^8c^3 - 20a^3b^9c^2 - 3 \\
& 7a^4b^2c^8 + 9a^4b^3c^7 + 583a^4b^4c^6 - 1362a^4b^5c^5 - 152a^4b^6c^4 + 156a^4b^7c^3 + 8a^4b^8c^2 - 399a^5b^2c^7 + 904a^5b^3c^6 + 394a^5b^4c^5 - 388a^5b^5c^4 - 60a^5b^6c^3 - 340a^6b^2c^6 \\
& + 364a^6b^3c^5 + 136a^6b^4c^4 - 100a^7b^2c^5))/c^8 + (((2048*(16a^3c^{13} - 32a^2c^{14} + 176a^4c^{12} + 176a^5c^{11} + 48a^6c^{10} - 2b^4c^{12} + 6b^5c^{11} - 18b^6c^{10} + 26b^7c^9 - 12b^8c^8 + 16ab^2c^{13} - \\
& 40ab^3c^{12} + 122ab^4c^{11} - 192ab^5c^{10} + 74ab^6c^9 + 20ab^7c^8 + 64a^2b^2c^{13} - 144a^3b^3c^{12} - 352a^4b^4c^{11} - 144a^5b^5c^{10} - 20 \\
& 4a^2b^2c^{12} + 388a^2b^3c^{11} - 50a^2b^4c^{10} - 182a^2b^5c^9 + 4a^2b^6c^8 - 260a^3b^2c^{11} + 496a^3b^3c^{10} + 10a^3b^4c^9 - 20a^3b^5c^8 - 148a^4b^2c^{10} + 116a^4b^3c^9 + 8a^4b^4c^8 - 44a^5b^2c^9 \\
& ^9))/c^8 - (2048*\tan(x/2)*((b^{10} - a^2b^8 - 8a^5c^5 - 8a^6c^4 - b^7*(- \\
& (4ac - b^2)^3)^{(1/2)} + 10a^3b^6c + a^2b^5*(-(4ac - b^2)^3)^{(1/2)} + \\
& 52a^2b^6c^2 - 96a^3b^4c^3 + 66a^4b^2c^4 - 33a^4b^4c^2 + 38a^5b^2c^3 - 12ab^8c + 4a^3b^3c^3*(-(4ac - b^2)^3)^{(1/2)} - 4a^3b^3c^3*(- \\
& -(4ac - b^2)^3)^{(1/2)} + 3a^4b^2c^2*(-(4ac - b^2)^3)^{(1/2)} - 10a^2b^3c^2*(-(4ac - b^2)^3)^{(1/2)} + 6ab^5c^5*(-(4ac - b^2)^3)^{(1/2)}))/(2*(16a^2c^{10} + 32a^3c^9 + 16a^4c^8 + b^4c^8 - b^6c^6 - 8ab^2c^9 + 10a \\
& *b^4c^7 - 32a^2b^2c^8 + a^2b^4c^6 - 8a^3b^2c^7))^{(1/2)}*(32a^c^{16} \\
& - 64a^2c^{15} - 128a^3c^{14} + 64a^4c^{13} + 96a^5c^{12} - 8b^2c^{15} + 24 \\
& *b^3c^{14} - 32b^4c^{13} + 32b^5c^{12} - 24b^6c^{11} + 8b^7c^{10} + 144ab^2c^{14} - 200ab^3c^{13} + 184ab^4c^{12} - 56ab^5c^{11} - 8ab^6c^{10} + 2 \\
& 88a^2b^2c^{14} + 352a^3b^3c^{13} - 32a^4b^4c^{12} - 320a^2b^2c^{13} + 8a^2b^3c^{12} + 96a^2b^4c^{11} - 8a^2b^5c^{10} - 272a^3b^2c^{12} + 40a^3b^3c^{11} + 8a^3b^4c^{10} - 56a^4b^2c^{11} - 96ab^2c^{15}))/c^8)*((b^{10} - a^2b^8 \\
& ^8 - 8a^5c^5 - 8a^6c^4 - b^7*(-(4ac - b^2)^3)^{(1/2)} + 10a^3b^6c + \\
& a^2b^5*(-(4ac - b^2)^3)^{(1/2)} + 52a^2b^6c^2 - 96a^3b^4c^3 + 66a^4b^2c^4 - 33a^4b^4c^2 + 38a^5b^2c^3 - 12ab^8c + 4a^3b^3c^3*(-(4a \\
& ac - b^2)^3)^{(1/2)} - 4a^3b^3c^3*(-(4ac - b^2)^3)^{(1/2)} + 3a^4b^2c^2*(- \\
& (4ac - b^2)^3)^{(1/2)} - 10a^2b^3c^2*(-(4ac - b^2)^3)^{(1/2)} + 6ab^5c^5*(-(4ac - b^2)^3)^{(1/2)}))/(2*(16a^2c^{10} + 32a^3c^9 + 16a^4c^8 + b^4 \\
& *c^8 - b^6c^6 - 8ab^2c^9 + 10ab^4c^7 - 32a^2b^2c^8 + a^2b^4c^6
\end{aligned}$$

$$\begin{aligned}
& - 8a^3b^2c^7))^{(1/2)} - (2048\tan(x/2)*(8a^*c^{14} - 64a^2*c^{13} + 80a^3*c^{12} + 168a^4*c^{11} - 192a^5*c^{10} - 136a^6*c^9 + 72a^7*c^8 - 2b^2*c^{13} \\
& + 6b^3*c^{12} - 17b^4*c^{11} + 33b^5*c^{10} - 49b^6*c^9 + 61b^7*c^8 - 52b^8*c^7 + 36b^9*c^6 - 24b^{10}*c^5 + 8b^{11}*c^4 + 84a*b^2*c^{12} - 178a*b^3*c^{11} \\
& + 295a*b^4*c^{10} - 416a*b^5*c^9 + 375a*b^6*c^8 - 308a*b^7*c^7 + 244a*b^8*c^6 - 72a*b^9*c^5 - 8a*b^{10}*c^4 + 184a^2*b*c^{12} - 328a^3*b*c^{11} - \\
& 16a^4*b*c^{10} + 496a^5*b*c^9 - 88a^6*b*c^8 - 416a^2*b^2*c^{11} + 770a^2*b^3*c^{10} - 723a^2*b^4*c^9 + 779a^2*b^5*c^8 - 732a^2*b^6*c^7 + 80a^2*b^7*c^6 \\
& + 112a^2*b^8*c^5 - 8a^2*b^9*c^4 + 180a^3*b^2*c^{10} - 494a^3*b^3*c^9 + 521a^3*b^4*c^8 + 572a^3*b^5*c^7 - 424a^3*b^6*c^6 + 56a^3*b^7*c^5 + 8a^3*b^8*c^4 \\
& + 234a^4*b^2*c^9 - 1152a^4*b^3*c^8 + 416a^4*b^4*c^7 - 140a^4*b^5*c^6 - 72a^4*b^6*c^5 + 64a^5*b^2*c^8 + 192a^5*b^3*c^7 + 220a^5*b^4*c^6 - 256a^6*b^2*c^7 - 24a*b*c^{13}))/c^8)*((b^{10} - a^2*b^8 - 8a^5*c^5 - \\
& 8a^6*c^4 - b^7*(-(4a*c - b^2)^3)^{(1/2)} + 10a^3*b^6*c + a^2*b^5*(-(4a*c - b^2)^3)^{(1/2)} + 52a^2*b^6*c^2 - 96a^3*b^4*c^3 + 66a^4*b^2*c^4 - 33a^4*b^4*c^2 \\
& + 38a^5*b^2*c^3 - 12a*b^8*c + 4a^3*b*c^3*(-(4a*c - b^2)^3)^{(1/2)} - 4a^3*b^3*c*(-(4a*c - b^2)^3)^{(1/2)} + 3a^4*b*c^2*(-(4a*c - b^2)^3)^{(1/2)} \\
& - 10a^2*b^3*c^2*(-(4a*c - b^2)^3)^{(1/2)} + 6a*b^5*c*(-(4a*c - b^2)^3)^{(1/2)}))/((2*(16a^2*c^{10} + 32a^3*c^9 + 16a^4*c^8 + b^4*c^8 - b^6*c^6 - \\
& 8a*b^2*c^9 + 10a*b^4*c^7 - 32a^2*b^2*c^8 + a^2*b^4*c^6 - 8a^3*b^2*c^7)))^{(1/2)})*((b^{10} - a^2*b^8 - 8a^5*c^5 - 8a^6*c^4 - b^7*(-(4a*c - b^2)^3)^{(1/2)} \\
& + 10a^3*b^6*c + a^2*b^5*(-(4a*c - b^2)^3)^{(1/2)} + 52a^2*b^6*c^2 - 96a^3*b^4*c^3 + 66a^4*b^2*c^4 - 33a^4*b^4*c^2 + 38a^5*b^2*c^3 - 12a*b^8*c \\
& + 4a^3*b*c^3*(-(4a*c - b^2)^3)^{(1/2)} - 4a^3*b^3*c*(-(4a*c - b^2)^3)^{(1/2)} + 3a^4*b*c^2*(-(4a*c - b^2)^3)^{(1/2)} - 10a^2*b^3*c^2*(-(4a*c - b^2)^3)^{(1/2)} \\
& + 6a*b^5*c*(-(4a*c - b^2)^3)^{(1/2)}))/((2*(16a^2*c^{10} + 32a^3*c^9 + 16a^4*c^8 + b^4*c^8 - b^6*c^6 - 8a*b^2*c^9 + 10a*b^4*c^7 - 32a^2*b^2*c^8 \\
& + a^2*b^4*c^6 - 8a^3*b^2*c^7)))^{(1/2)} - (2048\tan(x/2)*(20a*b^{12} + 4b^{12}*c - 4b^{13} - 40a^2*b^{11} + 40a^3*b^{10} - 20a^4*b^9 + 4a^5*b^8 + 2a^4*c^9 - 18a^5*c^8 \\
& + 38a^6*c^7 + 2a^7*c^6 - 44a^8*c^5 + 12a^9*c^4 + b^8*c^5 - b^9*c^4 + 4b^{10}*c^3 - 4b^{11}*c^2 - 8a*b^6*c^6 + 4a*b^7*c^5 - 31a*b^8*c^4 + 20a*b^9*c^3 - 20a*b^{10}*c^2 \\
& - 160a^2*b^{10}*c + 320a^3*b^9*c + 26a^4*b*c^8 - 300a^4*b^8*c - 84a^5*b*c^7 + 136a^5*b^7*c + 2a^6*b*c^6 - 24a^6*b^6*c + 168a^7*b*c^5 - 92a^8*b^6*c^4 + 20a^2*b^4*c^7 \\
& + 8a^2*b^5*c^6 + 82a^2*b^6*c^5 + 6a^2*b^7*c^4 + 8a^2*b^8*c^3 - 44a^2*b^9*c^2 - 16a^3*b^2*c^8 - 40a^3*b^3*c^7 - 104a^3*b^4*c^6 - 132a^3*b^5*c^5 + 34a^3*b^6*c^4 \\
& + 72a^3*b^7*c^3 + 460a^3*b^8*c^2 + 82a^4*b^2*c^7 + 174a^4*b^3*c^6 + 41a^4*b^4*c^5 - 149a^4*b^5*c^4 - 660a^4*b^6*c^3 - 900a^4*b^7*c^2 - 90a^5*b^2*c^6 \\
& + 96a^5*b^3*c^5 + 541a^5*b^4*c^4 + 1156a^5*b^5*c^3 + 764a^5*b^6*c^2 - 204a^6*b^2*c^5 - 704a^6*b^3*c^4 - 840a^6*b^4*c^3 - 300a^6*b^5*c^2 + 384a^7*b^2*c^4 \\
& + 272a^7*b^3*c^3 + 44a^7*b^4*c^2 - 32a^8*b^2*c^3 + 24a*b^{11}*c))/c^8)*((b^{10} - a^2*b^8 - 8a^5*c^5 - 8a^6*c^4 - b^7*(-(4a*c - b^2)^3)^{(1/2)} + 10a^3*b^6*c \\
& + a^2*b^5*(-(4a*c - b^2)^3)^{(1/2)} + 52a^2*b^6*c^2 - 96a^3*b^4*c^3 + 66a^4*b^2*c^4 - 33a^4*b^4*c^2 + 38a^5*b^2*c^3 - 12a*b^8*c + 4a^3*b*c^3*(-(4a*c - b^2)^3)^{(1/2)} \\
& - 4a^3*b^3*c^3*(-(4a*c - b^2)^3)^{(1/2)} - 4a^3*b^3*c^3*(-(4a*c - b^2)^3)^{(1/2)} - 4a^3*b^3*c^3*(-(4a*c - b^2)^3)^{(1/2)} - 4a^3*b^3*c^3*(-(4a*c - b^2)^3)^{(1/2)}
\end{aligned}$$

$$\begin{aligned}
& c * (- (4 * a * c - b^2)^3)^{(1/2)} + 3 * a^4 * b * c^2 * (- (4 * a * c - b^2)^3)^{(1/2)} - 10 * a^2 * \\
& b^3 * c^2 * (- (4 * a * c - b^2)^3)^{(1/2)} + 6 * a * b^5 * c * (- (4 * a * c - b^2)^3)^{(1/2)) / (2 * ( \\
& 16 * a^2 * c^{10} + 32 * a^3 * c^9 + 16 * a^4 * c^8 + b^4 * c^8 - b^6 * c^6 - 8 * a * b^2 * c^9 + 1 \\
& 0 * a * b^4 * c^7 - 32 * a^2 * b^2 * c^8 + a^2 * b^4 * c^6 - 8 * a^3 * b^2 * c^7)))^{(1/2)} * i - (( \\
& (2048 * (12 * a^3 * c^{11} - 28 * a^4 * c^{10} - 44 * a^5 * c^9 + 72 * a^6 * c^8 + 88 * a^7 * c^7 + 1 \\
& 2 * a^8 * c^6 + b^5 * c^9 - 4 * b^6 * c^8 + 10 * b^7 * c^7 - 20 * b^8 * c^6 + 29 * b^9 * c^5 - 30 \\
& * b^{10} * c^4 + 26 * b^{11} * c^3 - 12 * b^{12} * c^2 - 6 * a * b^3 * c^{10} + 27 * a * b^4 * c^9 - 72 * a * \\
& b^5 * c^8 + 154 * a * b^6 * c^7 - 238 * a * b^7 * c^6 + 251 * a * b^8 * c^5 - 228 * a * b^9 * c^4 + 9 \\
& 8 * a * b^{10} * c^3 + 20 * a * b^{11} * c^2 + 8 * a^2 * b * c^{11} - 68 * a^3 * b * c^{10} + 112 * a^4 * b * c^9 \\
& + 100 * a^5 * b * c^8 - 200 * a^6 * b * c^7 - 96 * a^7 * b * c^6 - 47 * a^2 * b^2 * c^{10} + 145 * a^2 \\
& * b^3 * c^9 - 354 * a^2 * b^4 * c^8 + 612 * a^2 * b^5 * c^7 - 655 * a^2 * b^6 * c^6 + 635 * a^2 * b^ \\
& 7 * c^5 - 202 * a^2 * b^8 * c^4 - 222 * a^2 * b^9 * c^3 + 4 * a^2 * b^{10} * c^2 + 239 * a^3 * b^2 * c^ \\
& 9 - 524 * a^3 * b^3 * c^8 + 536 * a^3 * b^4 * c^7 - 564 * a^3 * b^5 * c^6 - 115 * a^3 * b^6 * c^5 + \\
& 856 * a^3 * b^7 * c^4 + 2 * a^3 * b^8 * c^3 - 20 * a^3 * b^9 * c^2 - 37 * a^4 * b^2 * c^8 + 9 * a^4 * \\
& b^3 * c^7 + 583 * a^4 * b^4 * c^6 - 1362 * a^4 * b^5 * c^5 - 152 * a^4 * b^6 * c^4 + 156 * a^4 * b^ \\
& 7 * c^3 + 8 * a^4 * b^8 * c^2 - 399 * a^5 * b^2 * c^7 + 904 * a^5 * b^3 * c^6 + 394 * a^5 * b^4 * c^5 \\
& - 388 * a^5 * b^5 * c^4 - 60 * a^5 * b^6 * c^3 - 340 * a^6 * b^2 * c^6 + 364 * a^6 * b^3 * c^5 + 1 \\
& 36 * a^6 * b^4 * c^4 - 100 * a^7 * b^2 * c^5)) / c^8 + (((2048 * (16 * a^3 * c^{13} - 32 * a^2 * c^{14} \\
& + 176 * a^4 * c^{12} + 176 * a^5 * c^{11} + 48 * a^6 * c^{10} - 2 * b^4 * c^{12} + 6 * b^5 * c^{11} - 18 \\
& * b^6 * c^{10} + 26 * b^7 * c^9 - 12 * b^8 * c^8 + 16 * a * b^2 * c^{13} - 40 * a * b^3 * c^{12} + 122 * a \\
& * b^4 * c^{11} - 192 * a * b^5 * c^{10} + 74 * a * b^6 * c^9 + 20 * a * b^7 * c^8 + 64 * a^2 * b * c^{13} - \\
& 144 * a^3 * b * c^{12} - 352 * a^4 * b * c^{11} - 144 * a^5 * b * c^{10} - 204 * a^2 * b^2 * c^{12} + 388 * a \\
& ^2 * b^3 * c^{11} - 50 * a^2 * b^4 * c^{10} - 182 * a^2 * b^5 * c^9 + 4 * a^2 * b^6 * c^8 - 260 * a^3 * b \\
& ^2 * c^{11} + 496 * a^3 * b^3 * c^{10} + 10 * a^3 * b^4 * c^9 - 20 * a^3 * b^5 * c^8 - 148 * a^4 * b^2 * \\
& c^{10} + 116 * a^4 * b^3 * c^9 + 8 * a^4 * b^4 * c^8 - 44 * a^5 * b^2 * c^9)) / c^8 + (2048 * \tan(x \\
& / 2) * ((b^{10} - a^2 * b^8 - 8 * a^5 * c^5 - 8 * a^6 * c^4 - b^7 * (- (4 * a * c - b^2)^3)^{(1/2)} \\
& + 10 * a^3 * b^6 * c + a^2 * b^5 * (- (4 * a * c - b^2)^3)^{(1/2)} + 52 * a^2 * b^6 * c^2 - 96 * a^ \\
& 3 * b^4 * c^3 + 66 * a^4 * b^2 * c^4 - 33 * a^4 * b^4 * c^2 + 38 * a^5 * b^2 * c^3 - 12 * a * b^8 * c + \\
& 4 * a^3 * b * c^3 * (- (4 * a * c - b^2)^3)^{(1/2)} - 4 * a^3 * b^3 * c * (- (4 * a * c - b^2)^3)^{(1/2)} \\
& ) + 3 * a^4 * b * c^2 * (- (4 * a * c - b^2)^3)^{(1/2)} - 10 * a^2 * b^3 * c^2 * (- (4 * a * c - b^2)^3 \\
& )^{(1/2)} + 6 * a * b^5 * c * (- (4 * a * c - b^2)^3)^{(1/2)) / (2 * (16 * a^2 * c^{10} + 32 * a^3 * c^9 \\
& + 16 * a^4 * c^8 + b^4 * c^8 - b^6 * c^6 - 8 * a * b^2 * c^9 + 10 * a * b^4 * c^7 - 32 * a^2 * b^2 * \\
& c^8 + a^2 * b^4 * c^6 - 8 * a^3 * b^2 * c^7)))^{(1/2)} * (32 * a * c^{16} - 64 * a^2 * c^{15} - 128 * a \\
& ^3 * c^{14} + 64 * a^4 * c^{13} + 96 * a^5 * c^{12} - 8 * b^2 * c^{15} + 24 * b^3 * c^{14} - 32 * b^4 * c^{1 \\
& 3} + 32 * b^5 * c^{12} - 24 * b^6 * c^{11} + 8 * b^7 * c^{10} + 144 * a * b^2 * c^{14} - 200 * a * b^3 * c^{1 \\
& 3} + 184 * a * b^4 * c^{12} - 56 * a * b^5 * c^{11} - 8 * a * b^6 * c^{10} + 288 * a^2 * b * c^{14} + 352 * a^ \\
& 3 * b * c^{13} - 32 * a^4 * b * c^{12} - 320 * a^2 * b^2 * c^{13} + 8 * a^2 * b^3 * c^{12} + 96 * a^2 * b^4 * c \\
& ^{11} - 8 * a^2 * b^5 * c^{10} - 272 * a^3 * b^2 * c^{12} + 40 * a^3 * b^3 * c^{11} + 8 * a^3 * b^4 * c^{10} \\
& - 56 * a^4 * b^2 * c^{11} - 96 * a * b * c^{15})) / c^8 * ((b^{10} - a^2 * b^8 - 8 * a^5 * c^5 - 8 * a^6 \\
& * c^4 - b^7 * (- (4 * a * c - b^2)^3)^{(1/2)} + 10 * a^3 * b^6 * c + a^2 * b^5 * (- (4 * a * c - b^2 \\
& )^3)^{(1/2)} + 52 * a^2 * b^6 * c^2 - 96 * a^3 * b^4 * c^3 + 66 * a^4 * b^2 * c^4 - 33 * a^4 * b^4 * \\
& c^2 + 38 * a^5 * b^2 * c^3 - 12 * a * b^8 * c + 4 * a^3 * b * c^3 * (- (4 * a * c - b^2)^3)^{(1/2)} - \\
& 4 * a^3 * b^3 * c * (- (4 * a * c - b^2)^3)^{(1/2)} + 3 * a^4 * b * c^2 * (- (4 * a * c - b^2)^3)^{(1/2)} \\
& - 10 * a^2 * b^3 * c^2 * (- (4 * a * c - b^2)^3)^{(1/2)} + 6 * a * b^5 * c * (- (4 * a * c - b^2)^3)^{( \\
& 1/2)) / (2 * (16 * a^2 * c^{10} + 32 * a^3 * c^9 + 16 * a^4 * c^8 + b^4 * c^8 - b^6 * c^6 - 8 * a * b
\end{aligned}$$

$$\begin{aligned}
& ^2*c^9 + 10*a*b^4*c^7 - 32*a^2*b^2*c^8 + a^2*b^4*c^6 - 8*a^3*b^2*c^7))^{(1/2)} \\
& + (2048*\tan(x/2)*(8*a*c^{14} - 64*a^2*c^{13} + 80*a^3*c^{12} + 168*a^4*c^{11} - \\
& 192*a^5*c^{10} - 136*a^6*c^9 + 72*a^7*c^8 - 2*b^2*c^{13} + 6*b^3*c^{12} - 17*b^4*c^{11} + \\
& 33*b^5*c^{10} - 49*b^6*c^9 + 61*b^7*c^8 - 52*b^8*c^7 + 36*b^9*c^6 - 24 \\
& *b^{10}*c^5 + 8*b^{11}*c^4 + 84*a*b^2*c^{12} - 178*a*b^3*c^{11} + 295*a*b^4*c^{10} - \\
& 416*a*b^5*c^9 + 375*a*b^6*c^8 - 308*a*b^7*c^7 + 244*a*b^8*c^6 - 72*a*b^9*c^5 \\
& - 8*a*b^{10}*c^4 + 184*a^2*b*c^{12} - 328*a^3*b*c^{11} - 16*a^4*b*c^{10} + 496*a^5 \\
& *b*c^9 - 88*a^6*b*c^8 - 416*a^2*b^2*c^{11} + 770*a^2*b^3*c^{10} - 723*a^2*b^4*c^9 \\
& + 779*a^2*b^5*c^8 - 732*a^2*b^6*c^7 + 80*a^2*b^7*c^6 + 112*a^2*b^8*c^5 \\
& - 8*a^2*b^9*c^4 + 180*a^3*b^2*c^{10} - 494*a^3*b^3*c^9 + 521*a^3*b^4*c^8 + 57 \\
& 2*a^3*b^5*c^7 - 424*a^3*b^6*c^6 + 56*a^3*b^7*c^5 + 8*a^3*b^8*c^4 + 234*a^4*b^2*c^9 \\
& - 1152*a^4*b^3*c^8 + 416*a^4*b^4*c^7 - 140*a^4*b^5*c^6 - 72*a^4*b^6 \\
& *c^5 + 64*a^5*b^2*c^8 + 192*a^5*b^3*c^7 + 220*a^5*b^4*c^6 - 256*a^6*b^2*c^7 \\
& - 24*a*b*c^{13}))/c^8)*(b^{10} - a^2*b^8 - 8*a^5*c^5 - 8*a^6*c^4 - b^7*(-(4*a \\
& *c - b^2)^3)^{(1/2)} + 10*a^3*b^6*c + a^2*b^5*(-(4*a*c - b^2)^3)^{(1/2)} + 52*a \\
& ^2*b^6*c^2 - 96*a^3*b^4*c^3 + 66*a^4*b^2*c^4 - 33*a^4*b^4*c^2 + 38*a^5*b^2* \\
& c^3 - 12*a*b^8*c + 4*a^3*b*c^3*(-(4*a*c - b^2)^3)^{(1/2)} - 4*a^3*b^3*c*(-(4* \\
& a*c - b^2)^3)^{(1/2)} + 3*a^4*b*c^2*(-(4*a*c - b^2)^3)^{(1/2)} - 10*a^2*b^3*c^2 \\
& *(-(4*a*c - b^2)^3)^{(1/2)} + 6*a*b^5*c*(-(4*a*c - b^2)^3)^{(1/2)))/(2*(16*a^2* \\
& c^{10} + 32*a^3*c^9 + 16*a^4*c^8 + b^4*c^8 - b^6*c^6 - 8*a*b^2*c^9 + 10*a*b^4 \\
& *c^7 - 32*a^2*b^2*c^8 + a^2*b^4*c^6 - 8*a^3*b^2*c^7))^{(1/2)}*(b^{10} - a^2* \\
& b^8 - 8*a^5*c^5 - 8*a^6*c^4 - b^7*(-(4*a*c - b^2)^3)^{(1/2)} + 10*a^3*b^6*c + \\
& a^2*b^5*(-(4*a*c - b^2)^3)^{(1/2)} + 52*a^2*b^6*c^2 - 96*a^3*b^4*c^3 + 66*a^4 \\
& *b^2*c^4 - 33*a^4*b^4*c^2 + 38*a^5*b^2*c^3 - 12*a*b^8*c + 4*a^3*b*c^3*(-(4 \\
& *a*c - b^2)^3)^{(1/2)} - 4*a^3*b^3*c*(-(4*a*c - b^2)^3)^{(1/2)} + 3*a^4*b*c^2*( \\
& -(4*a*c - b^2)^3)^{(1/2)} - 10*a^2*b^3*c^2*(-(4*a*c - b^2)^3)^{(1/2)} + 6*a*b^5 \\
& *c*(-(4*a*c - b^2)^3)^{(1/2)))/(2*(16*a^2*c^{10} + 32*a^3*c^9 + 16*a^4*c^8 + b^4 \\
& *c^8 - b^6*c^6 - 8*a*b^2*c^9 + 10*a*b^4*c^7 - 32*a^2*b^2*c^8 + a^2*b^4*c^6 \\
& - 8*a^3*b^2*c^7))^{(1/2)} + (2048*\tan(x/2)*(20*a*b^{12} + 4*b^{12}*c - 4*b^{13} - \\
& 40*a^2*b^{11} + 40*a^3*b^{10} - 20*a^4*b^9 + 4*a^5*b^8 + 2*a^4*c^9 - 18*a^5*c^8 \\
& + 38*a^6*c^7 + 2*a^7*c^6 - 44*a^8*c^5 + 12*a^9*c^4 + b^8*c^5 - b^9*c^4 + \\
& 4*b^{10}*c^3 - 4*b^{11}*c^2 - 8*a*b^6*c^6 + 4*a*b^7*c^5 - 31*a*b^8*c^4 + 20*a*b \\
& ^9*c^3 - 20*a*b^{10}*c^2 - 160*a^2*b^{10}*c + 320*a^3*b^9*c + 26*a^4*b*c^8 - 30 \\
& 0*a^4*b^8*c - 84*a^5*b*c^7 + 136*a^5*b^7*c + 2*a^6*b*c^6 - 24*a^6*b^6*c + 1 \\
& 68*a^7*b*c^5 - 92*a^8*b*c^4 + 20*a^2*b^4*c^7 + 8*a^2*b^5*c^6 + 82*a^2*b^6*c^5 \\
& + 6*a^2*b^7*c^4 + 8*a^2*b^8*c^3 - 44*a^2*b^9*c^2 - 16*a^3*b^2*c^8 - 40*a^3 \\
& *b^3*c^7 - 104*a^3*b^4*c^6 - 132*a^3*b^5*c^5 + 34*a^3*b^6*c^4 + 72*a^3*b^7 \\
& *c^3 + 460*a^3*b^8*c^2 + 82*a^4*b^2*c^7 + 174*a^4*b^3*c^6 + 41*a^4*b^4*c^5 \\
& - 149*a^4*b^5*c^4 - 660*a^4*b^6*c^3 - 900*a^4*b^7*c^2 - 90*a^5*b^2*c^6 + 9 \\
& 6*a^5*b^3*c^5 + 541*a^5*b^4*c^4 + 1156*a^5*b^5*c^3 + 764*a^5*b^6*c^2 - 204* \\
& a^6*b^2*c^5 - 704*a^6*b^3*c^4 - 840*a^6*b^4*c^3 - 300*a^6*b^5*c^2 + 384*a^7 \\
& *b^2*c^4 + 272*a^7*b^3*c^3 + 44*a^7*b^4*c^2 - 32*a^8*b^2*c^3 + 24*a*b^{11}*c) \\
& )/c^8)*(b^{10} - a^2*b^8 - 8*a^5*c^5 - 8*a^6*c^4 - b^7*(-(4*a*c - b^2)^3)^{(1 \\
& /2)} + 10*a^3*b^6*c + a^2*b^5*(-(4*a*c - b^2)^3)^{(1/2)} + 52*a^2*b^6*c^2 - 96 \\
& *a^3*b^4*c^3 + 66*a^4*b^2*c^4 - 33*a^4*b^4*c^2 + 38*a^5*b^2*c^3 - 12*a*b^8*
\end{aligned}$$

$$\begin{aligned}
& c + 4a^3bc^3 \cdot (-4ac - b^2)^3)^{(1/2)} - 4a^3b^3c \cdot (-4ac - b^2)^3)^{(1/2)} + 3a^4b^2c^2 \cdot (-4ac - b^2)^3)^{(1/2)} - 10a^2b^3c^2 \cdot (-4ac - b^2)^3)^{(1/2)} + 6ab^5c \cdot (-4ac - b^2)^3)^{(1/2)} / (2(16a^2c^{10} + 32a^3c^9 + 16a^4c^8 + b^4c^8 - b^6c^6 - 8ab^2c^9 + 10ab^4c^7 - 32a^2b^2c^8 + a^2b^4c^6 - 8a^3b^2c^7)))^{(1/2)} \cdot i / ((4096(16a^5b^7 - 4a^4b^8 - 24a^6b^6 + 16a^7b^5 - 4a^8b^4 + 3a^6c^6 - 10a^7c^5 + a^8c^4 + 14a^9c^3 + 4a^4b^7c - 2a^5b^6c + 4a^5b^6c + 6a^6b^5c - 40a^6b^5c + 4a^7b^4c + 56a^7b^4c - 22a^8b^3c - 28a^8b^3c + 12a^9b^2c + 4a^9b^2c + a^4b^3c^5 - a^4b^4c^4 + 4a^4b^5c^3 - 4a^4b^6c^2 - a^5b^2c^5 - 8a^5b^3c^4 + 10a^6b^2c^4 - 4a^6b^3c^3 - 8a^6b^4c^2 + 4a^7b^2c^3 + 48a^7b^3c^2 - 48a^8b^2c^2)) / c^8 + ((2048(12a^3c^{11} - 28a^4c^{10} - 44a^5c^9 + 72a^6c^8 + 88a^7c^7 + 12a^8c^6 + b^5c^9 - 4b^6c^8 + 10b^7c^7 - 20b^8c^6 + 29b^9c^5 - 30b^{10}c^4 + 26b^{11}c^3 - 12b^{12}c^2 - 6ab^3c^{10} + 27ab^4c^9 - 72ab^5c^8 + 154ab^6c^7 - 238ab^7c^6 + 251ab^8c^5 - 228ab^9c^4 + 98ab^{10}c^3 + 20ab^{11}c^2 + 8a^2b^3c^{11} - 68a^3b^3c^{10} + 112a^4b^3c^9 + 100a^5b^3c^8 - 200a^6b^3c^7 - 96a^7b^3c^6 - 47a^2b^2c^{10} + 145a^2b^3c^9 - 354a^2b^4c^8 + 612a^2b^5c^7 - 655a^2b^6c^6 + 635a^2b^7c^5 - 202a^2b^8c^4 - 222a^2b^9c^3 + 4a^2b^{10}c^2 + 239a^3b^2c^9 - 524a^3b^3c^8 + 536a^3b^4c^7 - 564a^3b^5c^6 - 115a^3b^6c^5 + 856a^3b^7c^4 + 2a^3b^8c^3 - 20a^3b^9c^2 - 37a^4b^2c^8 + 9a^4b^3c^7 + 583a^4b^4c^6 - 1362a^4b^5c^5 - 152a^4b^6c^4 + 156a^4b^7c^3 + 8a^4b^8c^2 - 399a^5b^2c^7 + 904a^5b^3c^6 + 394a^5b^4c^5 - 388a^5b^5c^4 - 60a^5b^6c^3 - 340a^6b^2c^6 + 364a^6b^3c^5 + 136a^6b^4c^4 - 100a^7b^2c^5)) / c^8 + (((2048(16a^3c^{13} - 32a^2c^{14} + 176a^4c^{12} + 176a^5c^{11} + 48a^6c^{10} - 2b^4c^{12} + 6b^5c^{11} - 18b^6c^{10} + 26b^7c^9 - 12b^8c^8 + 16ab^2c^{13} - 40ab^3c^{12} + 122ab^4c^{11} - 192ab^5c^{10} + 74ab^6c^9 + 20ab^7c^8 + 64a^2b^3c^{13} - 144a^3b^3c^{12} - 352a^4b^3c^{11} - 144a^5b^3c^{10} - 204a^2b^2c^{12} + 388a^2b^3c^{11} - 50a^2b^4c^{10} - 182a^2b^5c^9 + 4a^2b^6c^8 - 260a^3b^2c^{11} + 496a^3b^3c^{10} + 10a^3b^4c^9 - 20a^3b^5c^8 - 148a^4b^2c^{10} + 116a^4b^3c^9 + 8a^4b^4c^8 - 44a^5b^2c^9)) / c^8 - (2048 \tan(x/2) \cdot ((b^{10} - a^2b^8 - 8a^5c^5 - 8a^6c^4 - b^7 \cdot (-4ac - b^2)^3)^{(1/2)} + 10a^3b^6c + a^2b^5 \cdot (-4ac - b^2)^3)^{(1/2)} + 52a^2b^6c^2 - 96a^3b^4c^3 + 66a^4b^2c^4 - 33a^4b^4c^2 + 38a^5b^2c^3 - 12ab^8c + 4a^3b^3c^3 \cdot (-4ac - b^2)^3)^{(1/2)} - 4a^3b^3c \cdot (-4ac - b^2)^3)^{(1/2)} + 3a^4b^2c^2 \cdot (-4ac - b^2)^3)^{(1/2)} - 10a^2b^3c^2 \cdot (-4ac - b^2)^3)^{(1/2)} + 6ab^5c \cdot (-4ac - b^2)^3)^{(1/2)} / (2(16a^2c^{10} + 32a^3c^9 + 16a^4c^8 + b^4c^8 - b^6c^6 - 8ab^2c^9 + 10ab^4c^7 - 32a^2b^2c^8 + a^2b^4c^6 - 8a^3b^2c^7)))^{(1/2)} \cdot (32a^3c^{16} - 64a^2c^{15} - 128a^3c^{14} + 64a^4c^{13} + 96a^5c^{12} - 8b^2c^{15} + 24b^3c^{14} - 32b^4c^{13} + 32b^5c^{12} - 24b^6c^{11} + 8b^7c^{10} + 144ab^2c^{14} - 200ab^3c^{13} + 184ab^4c^{12} - 56ab^5c^{11} - 8ab^6c^{10} + 288a^2b^3c^{14} + 352a^3b^3c^{13} - 32a^4b^3c^{12} - 320a^2b^2c^{13} + 8a^2b^3c^{12} + 96a^2b^4c^{11} - 8a^2b^5c^{10} - 272a^3b^2c^{12} + 40a^3b^3c^{11} + 8a^3b^4c^{10}
\end{aligned}$$

$$\begin{aligned}
& - 56a^4b^2c^{11} - 96a^3b^4c^{15})/c^8) * ((b^{10} - a^2b^8 - 8a^5c^5 - 8a^6c^4 \\
& *c^4 - b^7 * (-4ac - b^2)^3)^{1/2} + 10a^3b^6c + a^2b^5 * (-4ac - b^2)^3)^{1/2} + 52a^2b^6c^2 - 96a^3b^4c^3 + 66a^4b^2c^4 - 33a^4b^4c^2 \\
& + 38a^5b^2c^3 - 12a^6b^8c + 4a^3b^3c^3 * (-4ac - b^2)^3)^{1/2} - 4a^3b^3c^3 * (-4ac - b^2)^3)^{1/2} + 3a^4b^3c^2 * (-4ac - b^2)^3)^{1/2} \\
& - 10a^2b^3c^2 * (-4ac - b^2)^3)^{1/2} + 6a^5b^5c * (-4ac - b^2)^3)^{1/2} / (2 * (16a^2c^{10} + 32a^3c^9 + 16a^4c^8 + b^4c^8 - b^6c^6 - 8a^2b^2c^9 + 10a^2b^4c^7 - 32a^2b^2c^8 + a^2b^4c^6 - 8a^3b^2c^7)))^{1/2} \\
& - (2048 * \tan(x/2) * (8a^14 - 64a^2c^{13} + 80a^3c^{12} + 168a^4c^{11} - 192a^5c^{10} - 136a^6c^9 + 72a^7c^8 - 2b^2c^{13} + 6b^3c^{12} - 17b^4c^{11} + 33b^5c^{10} - 49b^6c^9 + 61b^7c^8 - 52b^8c^7 + 36b^9c^6 - 24b^{10}c^5 + 8b^{11}c^4 + 84a^2b^2c^{12} - 178a^3b^3c^{11} + 295a^4b^4c^{10} - 416a^5b^5c^9 + 375a^6b^6c^8 - 308a^7b^7c^7 + 244a^8b^8c^6 - 72a^9b^9c^5 - 8a^{10}b^{10}c^4 + 184a^{12}b^2c^{12} - 328a^{13}b^3c^{11} - 16a^{14}b^4c^{10} + 496a^{15}b^5c^9 - 88a^{16}b^6c^8 - 416a^{17}b^7c^7 + 770a^{18}b^8c^6 - 723a^{19}b^9c^5 + 779a^{20}b^{10}c^4 - 732a^{21}b^{11}c^3 + 80a^{22}b^{12}c^2 + 112a^{23}b^{13}c - 8a^{24}b^{14}c + 180a^{25}b^{15} - 494a^{26}b^{16} + 521a^{27}b^{17} - 572a^{28}b^{18} + 424a^{29}b^{19} - 424a^{30}b^{20} + 56a^{31}b^{21} + 8a^{32}b^{22} + 234a^{33}b^{23} - 1152a^{34}b^{24} + 416a^{35}b^{25} - 140a^{36}b^{26} - 72a^{37}b^{27} + 64a^{38}b^{28} + 192a^{39}b^{29} + 220a^{40}b^{30} - 256a^{41}b^{31} - 24a^{42}b^{32}))/c^8) * ((b^{10} - a^2b^8 - 8a^5c^5 - 8a^6c^4 - b^7 * (-4ac - b^2)^3)^{1/2} + 10a^3b^6c + a^2b^5 * (-4ac - b^2)^3)^{1/2} + 52a^2b^6c^2 - 96a^3b^4c^3 + 66a^4b^2c^4 - 33a^4b^4c^2 + 38a^5b^2c^3 - 12a^6b^8c + 4a^3b^3c^3 * (-4ac - b^2)^3)^{1/2} - 4a^3b^3c^3 * (-4ac - b^2)^3)^{1/2} + 3a^4b^3c^2 * (-4ac - b^2)^3)^{1/2} - 10a^2b^3c^2 * (-4ac - b^2)^3)^{1/2} + 6a^5b^5c * (-4ac - b^2)^3)^{1/2} / (2 * (16a^2c^{10} + 32a^3c^9 + 16a^4c^8 + b^4c^8 - b^6c^6 - 8a^2b^2c^9 + 10a^2b^4c^7 - 32a^2b^2c^8 + a^2b^4c^6 - 8a^3b^2c^7)))^{1/2}) * ((b^{10} - a^2b^8 - 8a^5c^5 - 8a^6c^4 - b^7 * (-4ac - b^2)^3)^{1/2} + 10a^3b^6c + a^2b^5 * (-4ac - b^2)^3)^{1/2} + 52a^2b^6c^2 - 96a^3b^4c^3 + 66a^4b^2c^4 - 33a^4b^4c^2 + 38a^5b^2c^3 - 12a^6b^8c + 4a^3b^3c^3 * (-4ac - b^2)^3)^{1/2} - 4a^3b^3c^3 * (-4ac - b^2)^3)^{1/2} + 3a^4b^3c^2 * (-4ac - b^2)^3)^{1/2} - 10a^2b^3c^2 * (-4ac - b^2)^3)^{1/2} + 6a^5b^5c * (-4ac - b^2)^3)^{1/2} / (2 * (16a^2c^{10} + 32a^3c^9 + 16a^4c^8 + b^4c^8 - b^6c^6 - 8a^2b^2c^9 + 10a^2b^4c^7 - 32a^2b^2c^8 + a^2b^4c^6 - 8a^3b^2c^7)))^{1/2} - (2048 * \tan(x/2) * (20a^{12}b^{12} + 4b^{12}c - 4b^{13} - 40a^2b^{11} + 40a^3b^{10} - 20a^4b^9 + 4a^5b^8 + 2a^4c^9 - 18a^5c^8 + 38a^6c^7 + 2a^7c^6 - 44a^8c^5 + 12a^9c^4 + b^8c^5 - b^9c^4 + 4b^{10}c^3 - 4b^{11}c^2 - 8a^2b^6c^6 + 4a^2b^7c^5 - 31a^2b^8c^4 + 20a^2b^9c^3 - 20a^2b^{10}c^2 - 160a^2b^{10}c + 320a^3b^9c + 26a^4b^8c - 300a^4b^8c - 84a^5b^7c + 136a^5b^7c + 2a^6b^6c^6 - 24a^6b^6c + 168a^7b^5c^5 - 92a^8b^4c^4 + 20a^2b^4c^7 + 8a^2b^5c^6 + 82a^2b^6c^5 + 6a^2b^7c^4 + 8a^2b^8c^3 - 44a^2b^9c^2 - 16a^3b^2c^8 - 40a^3b^3c^7 - 104a^3b^4c^6 - 132a^3b^5c^5 + 34a^3b^6c^4 + 72a^3b^7c^3 + 460a^3b^8c^2 + 82a^4b^2c^7 + 174a^4b^3c^6 + 41a^4b^4c^5
\end{aligned}$$



$$\begin{aligned}
& - 149a^4b^5c^4 - 660a^4b^6c^3 - 900a^4b^7c^2 - 90a^5b^2c^6 + 9 \\
& 6a^5b^3c^5 + 541a^5b^4c^4 + 1156a^5b^5c^3 + 764a^5b^6c^2 - 204a \\
& a^6b^2c^5 - 704a^6b^3c^4 - 840a^6b^4c^3 - 300a^6b^5c^2 + 384a^7 \\
& *b^2c^4 + 272a^7b^3c^3 + 44a^7b^4c^2 - 32a^8b^2c^3 + 24a*b^{11}c) \\
& )/c^8)*((b^{10} - a^2b^8 - 8a^5c^5 - 8a^6c^4 - b^7*(-(4a*c - b^2)^3)^{(1 \\
& /2) + 10a^3b^6c + a^2b^5*(-(4a*c - b^2)^3)^{(1/2) + 52a^2b^6c^2 - 96 \\
& *a^3b^4c^3 + 66a^4b^2c^4 - 33a^4b^4c^2 + 38a^5b^2c^3 - 12a*b^8c \\
& c + 4a^3b*c^3*(-(4a*c - b^2)^3)^{(1/2) - 4a^3b^3c*(-(4a*c - b^2)^3)^{( \\
& 1/2) + 3a^4b*c^2*(-(4a*c - b^2)^3)^{(1/2) - 10a^2b^3c^2*(-(4a*c - b^2 \\
& )^3)^{(1/2) + 6a*b^5c*(-(4a*c - b^2)^3)^{(1/2)))/(2*(16a^2c^{10} + 32a^3c \\
& ^9 + 16a^4c^8 + b^4c^8 - b^6c^6 - 8a*b^2c^9 + 10a*b^4c^7 - 32a^2b \\
& ^2c^8 + a^2b^4c^6 - 8a^3b^2c^7)))^{(1/2) + (((2048*(12a^3c^{11} - 28a \\
& ^4c^{10} - 44a^5c^9 + 72a^6c^8 + 88a^7c^7 + 12a^8c^6 + b^5c^9 - 4b \\
& ^6c^8 + 10b^7c^7 - 20b^8c^6 + 29b^9c^5 - 30b^{10}c^4 + 26b^{11}c^3 - \\
& 12b^{12}c^2 - 6a*b^3c^{10} + 27a*b^4c^9 - 72a*b^5c^8 + 154a*b^6c^7 - \\
& 238a*b^7c^6 + 251a*b^8c^5 - 228a*b^9c^4 + 98a*b^{10}c^3 + 20a*b^{11}c \\
& ^2 + 8a^2b*c^{11} - 68a^3b*c^{10} + 112a^4b*c^9 + 100a^5b*c^8 - 200a^ \\
& 6b*c^7 - 96a^7b*c^6 - 47a^2b^2c^{10} + 145a^2b^3c^9 - 354a^2b^4c^ \\
& 8 + 612a^2b^5c^7 - 655a^2b^6c^6 + 635a^2b^7c^5 - 202a^2b^8c^4 - \\
& 222a^2b^9c^3 + 4a^2b^{10}c^2 + 239a^3b^2c^9 - 524a^3b^3c^8 + 536 \\
& *a^3b^4c^7 - 564a^3b^5c^6 - 115a^3b^6c^5 + 856a^3b^7c^4 + 2a^3b \\
& b^8c^3 - 20a^3b^9c^2 - 37a^4b^2c^8 + 9a^4b^3c^7 + 583a^4b^4c^6 \\
& - 1362a^4b^5c^5 - 152a^4b^6c^4 + 156a^4b^7c^3 + 8a^4b^8c^2 - 3 \\
& 99a^5b^2c^7 + 904a^5b^3c^6 + 394a^5b^4c^5 - 388a^5b^5c^4 - 60a \\
& ^5b^6c^3 - 340a^6b^2c^6 + 364a^6b^3c^5 + 136a^6b^4c^4 - 100a^7b \\
& ^2c^5))/c^8 + (((2048*(16a^3c^{13} - 32a^2c^{14} + 176a^4c^{12} + 176a^5 \\
& *c^{11} + 48a^6c^{10} - 2b^4c^{12} + 6b^5c^{11} - 18b^6c^{10} + 26b^7c^9 - \\
& 12b^8c^8 + 16a*b^2c^{13} - 40a*b^3c^{12} + 122a*b^4c^{11} - 192a*b^5c^{1 \\
& 0 + 74a*b^6c^9 + 20a*b^7c^8 + 64a^2b*c^{13} - 144a^3b*c^{12} - 352a^4b \\
& *c^{11} - 144a^5b*c^{10} - 204a^2b^2c^{12} + 388a^2b^3c^{11} - 50a^2b^4c \\
& ^{10} - 182a^2b^5c^9 + 4a^2b^6c^8 - 260a^3b^2c^{11} + 496a^3b^3c^{1 \\
& 0 + 10a^3b^4c^9 - 20a^3b^5c^8 - 148a^4b^2c^{10} + 116a^4b^3c^9 + \\
& 8a^4b^4c^8 - 44a^5b^2c^9))/c^8 + (2048*tan(x/2)*((b^{10} - a^2b^8 - 8a \\
& ^5c^5 - 8a^6c^4 - b^7*(-(4a*c - b^2)^3)^{(1/2) + 10a^3b^6c + a^2b^5 \\
& *(- (4a*c - b^2)^3)^{(1/2) + 52a^2b^6c^2 - 96a^3b^4c^3 + 66a^4b^2c^ \\
& 4 - 33a^4b^4c^2 + 38a^5b^2c^3 - 12a*b^8c + 4a^3b*c^3*(-(4a*c - b \\
& ^2)^3)^{(1/2) - 4a^3b^3c*(-(4a*c - b^2)^3)^{(1/2) + 3a^4b*c^2*(-(4a*c \\
& - b^2)^3)^{(1/2) - 10a^2b^3c^2*(-(4a*c - b^2)^3)^{(1/2) + 6a*b^5c*(-(4a \\
& *c - b^2)^3)^{(1/2)))/(2*(16a^2c^{10} + 32a^3c^9 + 16a^4c^8 + b^4c^8 - \\
& b^6c^6 - 8a*b^2c^9 + 10a*b^4c^7 - 32a^2b^2c^8 + a^2b^4c^6 - 8a^3 \\
& *b^2c^7)))^{(1/2)*(32a*c^{16} - 64a^2c^{15} - 128a^3c^{14} + 64a^4c^{13} + 9 \\
& 6a^5c^{12} - 8b^2c^{15} + 24b^3c^{14} - 32b^4c^{13} + 32b^5c^{12} - 24b^6c \\
& ^{11} + 8b^7c^{10} + 144a*b^2c^{14} - 200a*b^3c^{13} + 184a*b^4c^{12} - 56a \\
& *b^5c^{11} - 8a*b^6c^{10} + 288a^2b*c^{14} + 352a^3b*c^{13} - 32a^4b*c^{12} \\
& - 320a^2b^2c^{13} + 8a^2b^3c^{12} + 96a^2b^4c^{11} - 8a^2b^5c^{10} - 27
\end{aligned}$$

$$\begin{aligned}
& 2*a^3*b^2*c^{12} + 40*a^3*b^3*c^{11} + 8*a^3*b^4*c^{10} - 56*a^4*b^2*c^{11} - 96*a* \\
& b*c^{15})/c^8)*((b^{10} - a^2*b^8 - 8*a^5*c^5 - 8*a^6*c^4 - b^7*(-(4*a*c - b^2) \\
& )^3)^{(1/2)} + 10*a^3*b^6*c + a^2*b^5*(-(4*a*c - b^2)^3)^{(1/2)} + 52*a^2*b^6*c \\
& ^2 - 96*a^3*b^4*c^3 + 66*a^4*b^2*c^4 - 33*a^4*b^4*c^2 + 38*a^5*b^2*c^3 - 12 \\
& *a*b^8*c + 4*a^3*b*c^3*(-(4*a*c - b^2)^3)^{(1/2)} - 4*a^3*b^3*c*(-(4*a*c - b^ \\
& 2)^3)^{(1/2)} + 3*a^4*b*c^2*(-(4*a*c - b^2)^3)^{(1/2)} - 10*a^2*b^3*c^2*(-(4*a* \\
& c - b^2)^3)^{(1/2)} + 6*a*b^5*c*(-(4*a*c - b^2)^3)^{(1/2)})/(2*(16*a^2*c^{10} + 3 \\
& 2*a^3*c^9 + 16*a^4*c^8 + b^4*c^8 - b^6*c^6 - 8*a*b^2*c^9 + 10*a*b^4*c^7 - 3 \\
& 2*a^2*b^2*c^8 + a^2*b^4*c^6 - 8*a^3*b^2*c^7)))^{(1/2)} + (2048*\tan(x/2)*(8*a* \\
& c^{14} - 64*a^2*c^{13} + 80*a^3*c^{12} + 168*a^4*c^{11} - 192*a^5*c^{10} - 136*a^6*c^ \\
& 9 + 72*a^7*c^8 - 2*b^2*c^{13} + 6*b^3*c^{12} - 17*b^4*c^{11} + 33*b^5*c^{10} - 49*b \\
& ^6*c^9 + 61*b^7*c^8 - 52*b^8*c^7 + 36*b^9*c^6 - 24*b^{10}*c^5 + 8*b^{11}*c^4 + \\
& 84*a*b^2*c^{12} - 178*a*b^3*c^{11} + 295*a*b^4*c^{10} - 416*a*b^5*c^9 + 375*a*b^6 \\
& *c^8 - 308*a*b^7*c^7 + 244*a*b^8*c^6 - 72*a*b^9*c^5 - 8*a*b^{10}*c^4 + 184*a^ \\
& 2*b*c^{12} - 328*a^3*b*c^{11} - 16*a^4*b*c^{10} + 496*a^5*b*c^9 - 88*a^6*b*c^8 - \\
& 416*a^2*b^2*c^{11} + 770*a^2*b^3*c^{10} - 723*a^2*b^4*c^9 + 779*a^2*b^5*c^8 - 7 \\
& 32*a^2*b^6*c^7 + 80*a^2*b^7*c^6 + 112*a^2*b^8*c^5 - 8*a^2*b^9*c^4 + 180*a^3 \\
& *b^2*c^{10} - 494*a^3*b^3*c^9 + 521*a^3*b^4*c^8 + 572*a^3*b^5*c^7 - 424*a^3*b \\
& ^6*c^6 + 56*a^3*b^7*c^5 + 8*a^3*b^8*c^4 + 234*a^4*b^2*c^9 - 1152*a^4*b^3*c^ \\
& 8 + 416*a^4*b^4*c^7 - 140*a^4*b^5*c^6 - 72*a^4*b^6*c^5 + 64*a^5*b^2*c^8 + 1 \\
& 92*a^5*b^3*c^7 + 220*a^5*b^4*c^6 - 256*a^6*b^2*c^7 - 24*a*b*c^{13}))/c^8)*((b \\
& ^{10} - a^2*b^8 - 8*a^5*c^5 - 8*a^6*c^4 - b^7*(-(4*a*c - b^2)^3)^{(1/2)} + 10*a \\
& ^3*b^6*c + a^2*b^5*(-(4*a*c - b^2)^3)^{(1/2)} + 52*a^2*b^6*c^2 - 96*a^3*b^4*c \\
& ^3 + 66*a^4*b^2*c^4 - 33*a^4*b^4*c^2 + 38*a^5*b^2*c^3 - 12*a*b^8*c + 4*a^3* \\
& b*c^3*(-(4*a*c - b^2)^3)^{(1/2)} - 4*a^3*b^3*c*(-(4*a*c - b^2)^3)^{(1/2)} + 3*a \\
& ^4*b*c^2*(-(4*a*c - b^2)^3)^{(1/2)} - 10*a^2*b^3*c^2*(-(4*a*c - b^2)^3)^{(1/2)} \\
& + 6*a*b^5*c*(-(4*a*c - b^2)^3)^{(1/2)})/(2*(16*a^2*c^{10} + 32*a^3*c^9 + 16*a^ \\
& 4*c^8 + b^4*c^8 - b^6*c^6 - 8*a*b^2*c^9 + 10*a*b^4*c^7 - 32*a^2*b^2*c^8 + a \\
& ^2*b^4*c^6 - 8*a^3*b^2*c^7)))^{(1/2)}*((b^{10} - a^2*b^8 - 8*a^5*c^5 - 8*a^6*c \\
& ^4 - b^7*(-(4*a*c - b^2)^3)^{(1/2)} + 10*a^3*b^6*c + a^2*b^5*(-(4*a*c - b^2)^ \\
& 3)^{(1/2)} + 52*a^2*b^6*c^2 - 96*a^3*b^4*c^3 + 66*a^4*b^2*c^4 - 33*a^4*b^4*c^ \\
& 2 + 38*a^5*b^2*c^3 - 12*a*b^8*c + 4*a^3*b*c^3*(-(4*a*c - b^2)^3)^{(1/2)} - 4* \\
& a^3*b^3*c*(-(4*a*c - b^2)^3)^{(1/2)} + 3*a^4*b*c^2*(-(4*a*c - b^2)^3)^{(1/2)} - \\
& 10*a^2*b^3*c^2*(-(4*a*c - b^2)^3)^{(1/2)} + 6*a*b^5*c*(-(4*a*c - b^2)^3)^{(1/ \\
& 2)})/(2*(16*a^2*c^{10} + 32*a^3*c^9 + 16*a^4*c^8 + b^4*c^8 - b^6*c^6 - 8*a*b^2 \\
& *c^9 + 10*a*b^4*c^7 - 32*a^2*b^2*c^8 + a^2*b^4*c^6 - 8*a^3*b^2*c^7)))^{(1/2)} \\
& + (2048*\tan(x/2)*(20*a*b^{12} + 4*b^{12}*c - 4*b^{13} - 40*a^2*b^{11} + 40*a^3*b^{1 \\
& 0} - 20*a^4*b^9 + 4*a^5*b^8 + 2*a^4*c^9 - 18*a^5*c^8 + 38*a^6*c^7 + 2*a^7*c^ \\
& 6 - 44*a^8*c^5 + 12*a^9*c^4 + b^8*c^5 - b^9*c^4 + 4*b^{10}*c^3 - 4*b^{11}*c^2 - \\
& 8*a*b^6*c^6 + 4*a*b^7*c^5 - 31*a*b^8*c^4 + 20*a*b^9*c^3 - 20*a*b^{10}*c^2 - \\
& 160*a^2*b^{10}*c + 320*a^3*b^9*c + 26*a^4*b*c^8 - 300*a^4*b^8*c - 84*a^5*b*c^ \\
& 7 + 136*a^5*b^7*c + 2*a^6*b*c^6 - 24*a^6*b^6*c + 168*a^7*b*c^5 - 92*a^8*b*c \\
& ^4 + 20*a^2*b^4*c^7 + 8*a^2*b^5*c^6 + 82*a^2*b^6*c^5 + 6*a^2*b^7*c^4 + 8*a^ \\
& 2*b^8*c^3 - 44*a^2*b^9*c^2 - 16*a^3*b^2*c^8 - 40*a^3*b^3*c^7 - 104*a^3*b^4* \\
& c^6 - 132*a^3*b^5*c^5 + 34*a^3*b^6*c^4 + 72*a^3*b^7*c^3 + 460*a^3*b^8*c^2 +
\end{aligned}$$

$$\begin{aligned}
& 82a^4b^2c^7 + 174a^4b^3c^6 + 41a^4b^4c^5 - 149a^4b^5c^4 - 660a^4b^6c^3 - 900a^4b^7c^2 - 90a^5b^2c^6 + 96a^5b^3c^5 + 541a^5b^4c^4 + 1156a^5b^5c^3 + 764a^5b^6c^2 - 204a^6b^2c^5 - 704a^6b^3c^4 - 840a^6b^4c^3 - 300a^6b^5c^2 + 384a^7b^2c^4 + 272a^7b^3c^3 + 44a^7b^4c^2 - 32a^8b^2c^3 + 24a^8b^3c^2) / c^8 * ((b^{10} - a^2b^8 - 8a^5c^5 - 8a^6c^4 - b^7 * (-4ac - b^2)^3)^{1/2} + 10a^3b^6c + a^2b^5 * (-4ac - b^2)^3)^{1/2} + 52a^2b^6c^2 - 96a^3b^4c^3 + 66a^4b^2c^4 - 33a^4b^4c^2 + 38a^5b^2c^3 - 12a^6b^8c + 4a^3b^3c^3 * (-4ac - b^2)^3)^{1/2} - 4a^3b^3c * (-4ac - b^2)^3)^{1/2} + 3a^4b^3c^2 * (-4ac - b^2)^3)^{1/2} - 10a^2b^3c^2 * (-4ac - b^2)^3)^{1/2} + 6a^5b^5c * (-4ac - b^2)^3)^{1/2} / (2 * (16a^2c^{10} + 32a^3c^9 + 16a^4c^8 + b^4c^8 - b^6c^6 - 8a^2b^2c^9 + 10a^3b^4c^7 - 32a^2b^2c^8 + a^2b^4c^6 - 8a^3b^2c^7)))^{1/2} * ((b^{10} - a^2b^8 - 8a^5c^5 - 8a^6c^4 - b^7 * (-4ac - b^2)^3)^{1/2} + 10a^3b^6c + a^2b^5 * (-4ac - b^2)^3)^{1/2} + 52a^2b^6c^2 - 96a^3b^4c^3 + 66a^4b^2c^4 - 33a^4b^4c^2 + 38a^5b^2c^3 - 12a^6b^8c + 4a^3b^3c^3 * (-4ac - b^2)^3)^{1/2} - 4a^3b^3c * (-4ac - b^2)^3)^{1/2} + 3a^4b^3c^2 * (-4ac - b^2)^3)^{1/2} - 10a^2b^3c^2 * (-4ac - b^2)^3)^{1/2} + 6a^5b^5c * (-4ac - b^2)^3)^{1/2} / (2 * (16a^2c^{10} + 32a^3c^9 + 16a^4c^8 + b^4c^8 - b^6c^6 - 8a^2b^2c^9 + 10a^3b^4c^7 - 32a^2b^2c^8 + a^2b^4c^6 - 8a^3b^2c^7)))^{1/2} * 2i + (\operatorname{atan}(-((2048 * \tan(x/2) * (20a^2b^{12} + 4b^{12}c - 4b^{13} - 40a^2b^{11} + 40a^3b^{10} - 20a^4b^9 + 4a^5b^8 + 2a^4c^9 - 18a^5c^8 + 38a^6c^7 + 2a^7c^6 - 44a^8c^5 + 12a^9c^4 + b^8c^5 - b^9c^4 + 4b^{10}c^3 - 4b^{11}c^2 - 8a^2b^6c^6 + 4a^2b^7c^5 - 31a^2b^8c^4 + 20a^2b^9c^3 - 20a^2b^{10}c^2 - 160a^2b^{10}c + 320a^3b^9c + 26a^4b^8c - 300a^4b^8c - 84a^5b^7c + 136a^5b^7c + 2a^6b^6c - 24a^6b^6c + 168a^7b^5c - 92a^8b^4c + 20a^2b^4c^7 + 8a^2b^5c^6 + 82a^2b^6c^5 + 6a^2b^7c^4 + 8a^2b^8c^3 - 44a^2b^9c^2 - 16a^3b^2c^8 - 40a^3b^3c^7 - 104a^3b^4c^6 - 132a^3b^5c^5 + 34a^3b^6c^4 + 72a^3b^7c^3 + 460a^3b^8c^2 + 82a^4b^2c^7 + 174a^4b^3c^6 + 41a^4b^4c^5 - 149a^4b^5c^4 - 660a^4b^6c^3 - 900a^4b^7c^2 - 90a^5b^2c^6 + 96a^5b^3c^5 + 541a^5b^4c^4 + 1156a^5b^5c^3 + 764a^5b^6c^2 - 204a^6b^2c^5 - 704a^6b^3c^4 - 840a^6b^4c^3 - 300a^6b^5c^2 + 384a^7b^2c^4 + 272a^7b^3c^3 + 44a^7b^4c^2 - 32a^8b^2c^3 + 24a^8b^3c^2)) / c^8 - (((2048 * (12a^3c^{11} - 28a^4c^{10} - 44a^5c^9 + 72a^6c^8 + 88a^7c^7 + 12a^8c^6 + b^5c^9 - 4b^6c^8 + 10b^7c^7 - 20b^8c^6 + 29b^9c^5 - 30b^{10}c^4 + 26b^{11}c^3 - 12b^{12}c^2 - 6a^2b^3c^{10} + 27a^2b^4c^9 - 72a^2b^5c^8 + 154a^2b^6c^7 - 238a^2b^7c^6 + 251a^2b^8c^5 - 228a^2b^9c^4 + 98a^2b^{10}c^3 + 20a^2b^{11}c^2 + 8a^2b^{11}c^2 + 8a^2b^{11}c^2 - 68a^3b^3c^{10} + 112a^4b^3c^9 + 100a^5b^3c^8 - 200a^6b^3c^7 - 96a^7b^3c^6 - 47a^2b^2c^{10} + 145a^2b^3c^9 - 354a^2b^4c^8 + 612a^2b^5c^7 - 655a^2b^6c^6 + 635a^2b^7c^5 - 202a^2b^8c^4 - 222a^2b^9c^3 + 4a^2b^{10}c^2 + 239a^3b^2c^9 - 524a^3b^3c^8 + 536a^3b^4c^7 - 564a^3b^5c^6 - 115a^3b^6c^5 + 856a^3b^7c^4 + 2a^3b^8c^3 - 20a^3b^9c^2 - 37a^4b^2c^8 + 9a^4b^3c^7 + 583a^4b^4c^6 - 1362a^4b^5c^5 - 152a^4b^6c^4 + 156a^4b^7c^3 + 8a^4b^
\end{aligned}$$

$$\begin{aligned}
& 8c^2 - 399a^5b^2c^7 + 904a^5b^3c^6 + 394a^5b^4c^5 - 388a^5b^5c^4 - 60a^5b^6c^3 - 340a^6b^2c^6 + 364a^6b^3c^5 + 136a^6b^4c^4 - \\
& 100a^7b^2c^5)/c^8 - (((2048\tan(x/2)*(8a^*c^{14} - 64a^2c^{13} + 80a^3c^{12} + 168a^4c^{11} - 192a^5c^{10} - 136a^6c^9 + 72a^7c^8 - 2b^2c^{13} \\
& + 6b^3c^{12} - 17b^4c^{11} + 33b^5c^{10} - 49b^6c^9 + 61b^7c^8 - 52b^8c^7 + 36b^9c^6 - 24b^{10}c^5 + 8b^{11}c^4 + 84a*b^2c^{12} - 178a*b^3c^{11} \\
& + 295a*b^4c^{10} - 416a*b^5c^9 + 375a*b^6c^8 - 308a*b^7c^7 + 244a*b^8c^6 - 72a*b^9c^5 - 8a*b^{10}c^4 + 184a^2b*c^{12} - 328a^3b*c^{11} - \\
& 16a^4b*c^{10} + 496a^5b*c^9 - 88a^6b*c^8 - 416a^2b^2c^{11} + 770a^2b^3c^{10} - 723a^2b^4c^9 + 779a^2b^5c^8 - 732a^2b^6c^7 + 80a^2b^7c^6 \\
& + 112a^2b^8c^5 - 8a^2b^9c^4 + 180a^3b^2c^{10} - 494a^3b^3c^9 + 521a^3b^4c^8 + 572a^3b^5c^7 - 424a^3b^6c^6 + 56a^3b^7c^5 + 8a^3b^8c^4 \\
& + 234a^4b^2c^9 - 1152a^4b^3c^8 + 416a^4b^4c^7 - 140a^4b^5c^6 - 72a^4b^6c^5 + 64a^5b^2c^8 + 192a^5b^3c^7 + 220a^5b^4c^6 - 256a^6b^2c^7 - 24a*b*c^{13}))/c^8 - (((2048*(16a^3c^{13} - 32a^2c^{14} \\
& + 176a^4c^{12} + 176a^5c^{11} + 48a^6c^{10} - 2b^4c^{12} + 6b^5c^{11} - 18b^6c^{10} + 26b^7c^9 - 12b^8c^8 + 16a*b^2c^{13} - 40a*b^3c^{12} + 1 \\
& 22a*b^4c^{11} - 192a*b^5c^{10} + 74a*b^6c^9 + 20a*b^7c^8 + 64a^2b*c^{13} - 144a^3b*c^{12} - 352a^4b*c^{11} - 144a^5b*c^{10} - 204a^2b^2c^{12} + 3 \\
& 88a^2b^3c^{11} - 50a^2b^4c^{10} - 182a^2b^5c^9 + 4a^2b^6c^8 - 260a^3b^2c^{11} + 496a^3b^3c^{10} + 10a^3b^4c^9 - 20a^3b^5c^8 - 148a^4b^2c^{10} \\
& + 116a^4b^3c^9 + 8a^4b^4c^8 - 44a^5b^2c^9))/c^8 - (1024\tan(x/2)*(b^2*2i - a*c*2i + c^2*1i)*(32a^*c^{16} - 64a^2c^{15} - 128a^3c^{14} \\
& + 64a^4c^{13} + 96a^5c^{12} - 8b^2c^{15} + 24b^3c^{14} - 32b^4c^{13} + 32b^5c^{12} - 24b^6c^{11} + 8b^7c^{10} + 144a*b^2c^{14} - 200a*b^3c^{13} + 184a*b^4c^{12} \\
& - 56a*b^5c^{11} - 8a*b^6c^{10} + 288a^2b*c^{14} + 352a^3b*c^{13} - 32a^4b*c^{12} - 320a^2b^2c^{13} + 8a^2b^3c^{12} + 96a^2b^4c^{11} - 8a^2b^5c^{10} - 272a^3b^2c^{12} \\
& + 40a^3b^3c^{11} + 8a^3b^4c^{10} - 56a^4b^2c^{11} - 96a*b*c^{15}))/c^{11}*(b^2*2i - a*c*2i + c^2*1i))/(2c^3))*(b^2*2i - a*c*2i + c^2*1i))/(2c^3))*(b^2*2i \\
& - a*c*2i + c^2*1i)*1i)/(2c^3) + (((2048\tan(x/2)*(20a*b^{12} + 4b^{12}c - 4b^{13} - 40a^2b^{11} + 40a^3b^{10} - 20a^4b^9 + 4a^5b^8 + 2a^4c^9 - 1 \\
& 8a^5c^8 + 38a^6c^7 + 2a^7c^6 - 44a^8c^5 + 12a^9c^4 + b^8c^5 - b^9c^4 + 4b^{10}c^3 - 4b^{11}c^2 - 8a*b^6c^6 + 4a*b^7c^5 - 31a*b^8c^4 \\
& + 20a*b^9c^3 - 20a*b^{10}c^2 - 160a^2b^{10}c + 320a^3b^9c + 26a^4b^8c^8 - 300a^4b^8c - 84a^5b^7c^7 + 136a^5b^7c + 2a^6b^6c^6 - 24a^6b^6c^6 \\
& + 168a^7b^6c^5 - 92a^8b^6c^4 + 20a^2b^4c^7 + 8a^2b^5c^6 + 82a^2b^6c^5 + 6a^2b^7c^4 + 8a^2b^8c^3 - 44a^2b^9c^2 - 16a^3b^2c^8 - 40a^3b^3c^7 \\
& - 104a^3b^4c^6 - 132a^3b^5c^5 + 34a^3b^6c^4 + 72a^3b^7c^3 + 460a^3b^8c^2 + 82a^4b^2c^7 + 174a^4b^3c^6 + 41a^4b^4c^5 - 149a^4b^5c^4 - 660a^4b^6c^3 \\
& - 900a^4b^7c^2 - 90a^5b^2c^6 + 96a^5b^3c^5 + 541a^5b^4c^4 + 1156a^5b^5c^3 + 764a^5b^6c^2 - 204a^6b^2c^5 - 704a^6b^3c^4 - 840a^6b^4c^3 - 300a^6b^5c^2 + \\
& 384a^7b^2c^4 + 272a^7b^3c^3 + 44a^7b^4c^2 - 32a^8b^2c^3 + 24a*b^{11}c))/c^8 + (((2048*(12a^3c^{11} - 28a^4c^{10} - 44a^5c^9 + 72a^6c^8
\end{aligned}$$

$$\begin{aligned}
& 8 + 88a^7c^7 + 12a^8c^6 + b^5c^9 - 4b^6c^8 + 10b^7c^7 - 20b^8c^6 \\
& + 29b^9c^5 - 30b^{10}c^4 + 26b^{11}c^3 - 12b^{12}c^2 - 6a^2b^3c^{10} + 27 \\
& *a^2b^4c^9 - 72a^2b^5c^8 + 154a^2b^6c^7 - 238a^2b^7c^6 + 251a^2b^8c^5 - \\
& 228a^2b^9c^4 + 98a^2b^{10}c^3 + 20a^2b^{11}c^2 + 8a^2b^{12}c - 68a^3b^3c^{10} \\
& + 112a^4b^3c^9 + 100a^5b^3c^8 - 200a^6b^3c^7 - 96a^7b^3c^6 - 47a^2b^2c^{10} \\
& + 145a^2b^3c^9 - 354a^2b^4c^8 + 612a^2b^5c^7 - 655a^2b^6c^6 + 635a^2b^7c^5 \\
& - 202a^2b^8c^4 - 222a^2b^9c^3 + 4a^2b^{10}c^2 + 239a^3b^2c^9 - 524a^3b^3c^8 \\
& + 536a^3b^4c^7 - 564a^3b^5c^6 - 115a^3b^6c^5 + 856a^3b^7c^4 + 2a^3b^8c^3 - 20a^3b^9c^2 \\
& - 37a^4b^2c^8 + 9a^4b^3c^7 + 583a^4b^4c^6 - 1362a^4b^5c^5 - 152a^4b^6c^4 \\
& + 156a^4b^7c^3 + 8a^4b^8c^2 - 399a^5b^2c^7 + 904a^5b^3c^6 + 394a^5b^4c^5 \\
& - 388a^5b^5c^4 - 60a^5b^6c^3 - 340a^6b^2c^6 + 364a^6b^3c^5 + 136a^6b^4c^4 \\
& - 100a^7b^2c^5)/c^8 + (((2048*\tan(x/2))*(8a^2c^{14} - 64a^2c^{13} + 80a^3c^{12} + 168a^4c^{11} \\
& - 192a^5c^{10} - 136a^6c^9 + 72a^7c^8 - 2b^2c^{13} + 6b^3c^{12} - 17b^4c^{11} + 33b^5c^{10} \\
& - 49b^6c^9 + 61b^7c^8 - 52b^8c^7 + 36b^9c^6 - 24b^{10}c^5 + 8b^{11}c^4 + 84a^2b^2c^{12} \\
& - 178a^2b^3c^{11} + 295a^2b^4c^{10} - 416a^2b^5c^9 + 375a^2b^6c^8 - 308a^2b^7c^7 \\
& + 244a^2b^8c^6 - 72a^2b^9c^5 - 8a^2b^{10}c^4 + 184a^2b^{11}c^3 - 328a^3b^3c^{11} \\
& - 16a^4b^3c^{10} + 496a^5b^3c^9 - 88a^6b^3c^8 - 416a^2b^2c^{11} + 770a^2b^3c^{10} \\
& - 723a^2b^4c^9 + 779a^2b^5c^8 - 732a^2b^6c^7 + 80a^2b^7c^6 + 112a^2b^8c^5 - 8a^2b^9c^4 \\
& + 180a^3b^2c^{10} - 494a^3b^3c^9 + 521a^3b^4c^8 + 572a^3b^5c^7 - 424a^3b^6c^6 \\
& + 56a^3b^7c^5 + 8a^3b^8c^4 + 234a^4b^2c^9 - 1152a^4b^3c^8 + 416a^4b^4c^7 \\
& - 140a^4b^5c^6 - 72a^4b^6c^5 + 64a^5b^2c^8 + 192a^5b^3c^7 + 220a^5b^4c^6 \\
& - 256a^6b^2c^7 - 24a^2b^2c^{13}))/c^8 + (((2048*(16a^3c^{13} - 32a^2c^{14} + 176a^4c^{12} \\
& + 176a^5c^{11} + 48a^6c^{10} - 2b^4c^{12} + 6b^5c^{11} - 18b^6c^{10} + 26b^7c^9 - 12b^8c^8 + 16a^2b^2c^{13} \\
& - 40a^2b^3c^{12} + 122a^2b^4c^{11} - 192a^2b^5c^{10} + 74a^2b^6c^9 + 20a^2b^7c^8 \\
& + 64a^2b^8c^7 - 144a^3b^3c^{12} - 352a^4b^3c^{11} - 144a^5b^3c^{10} - 204a^2b^2c^{12} \\
& + 388a^2b^3c^{11} - 50a^2b^4c^{10} - 182a^2b^5c^9 + 4a^2b^6c^8 - 260a^3b^2c^{11} \\
& + 496a^3b^3c^{10} + 10a^3b^4c^9 - 20a^3b^5c^8 - 148a^4b^2c^{10} + 116a^4b^3c^9 + 8a^4b^4c^8 \\
& - 44a^5b^2c^9))/c^8 + (1024*\tan(x/2)*(b^2*2i - a*c*2i + c^2*1i))*(32a^2c^{16} \\
& - 64a^2c^{15} - 128a^3c^{14} + 64a^4c^{13} + 96a^5c^{12} - 8b^2c^{15} + 24b^3c^{14} \\
& - 32b^4c^{13} + 32b^5c^{12} - 24b^6c^{11} + 8b^7c^{10} + 144a^2b^2c^{14} - 200a^2b^3c^{13} \\
& + 184a^2b^4c^{12} - 56a^2b^5c^{11} - 8a^2b^6c^{10} + 288a^2b^7c^9 + 352a^3b^3c^{13} \\
& - 32a^4b^3c^{12} - 320a^2b^2c^{13} + 8a^2b^3c^{12} + 96a^2b^4c^{11} - 8a^2b^5c^{10} - 272a^3b^2c^{12} \\
& + 40a^3b^3c^{11} + 8a^3b^4c^{10} - 56a^4b^2c^{11} - 96a^2b^2c^{15}))/c^{11}*(b^2*2i - a*c*2i \\
& + c^2*1i))/(2*c^3)*(b^2*2i - a*c*2i + c^2*1i))/(2*c^3)*(b^2*2i - a*c*2i \\
& + c^2*1i))/(2*c^3)*(b^2*2i - a*c*2i + c^2*1i)*1i)/(2*c^3))/((4096*(16a^5b^7 \\
& - 4a^4b^8 - 24a^6b^6 + 16a^7b^5 - 4a^8b^4 + 3a^6c^6 - 10a^7c^5 + a^8c^4 + 14a^9c^3 \\
& + 4a^4b^7c - 2a^5b^6c + 4a^5b^6c + 6a^6b^5c - 40a^6b^5c + 4a^7b^4c + 56a^7b^4c \\
& - 22a^8b^3c - 28a^8b^3c + 12a^9b^2c + 4a^9b^2c + a^4b^3c^5 - a^4b^4c^4 + 4*
\end{aligned}$$

$$\begin{aligned}
& a^4 b^5 c^3 - 4 a^4 b^6 c^2 - a^5 b^2 c^5 - 8 a^5 b^3 c^4 + 10 a^6 b^2 c^4 \\
& - 4 a^6 b^3 c^3 - 8 a^6 b^4 c^2 + 4 a^7 b^2 c^3 + 48 a^7 b^3 c^2 - 48 a^8 b^2 c^2) / c^8 - (((2048 \tan(x/2) * (20 a^* b^{12} + 4 b^{12} c - 4 b^{13} - 40 a^2 b^{11} \\
& + 40 a^3 b^{10} - 20 a^4 b^9 + 4 a^5 b^8 + 2 a^4 c^9 - 18 a^5 c^8 + 38 a^6 c^7 + 2 a^7 c^6 - 44 a^8 c^5 + 12 a^9 c^4 + b^8 c^5 - b^9 c^4 + 4 b^{10} c^3 \\
& - 4 b^{11} c^2 - 8 a^* b^6 c^6 + 4 a^* b^7 c^5 - 31 a^* b^8 c^4 + 20 a^* b^9 c^3 - 20 a^* b^{10} c^2 - 160 a^2 b^{10} c + 320 a^3 b^9 c + 26 a^4 b^8 c^8 - 300 a^4 b^8 c \\
& - 84 a^5 b^7 c^7 + 136 a^5 b^7 c^6 + 2 a^6 b^6 c^6 - 24 a^6 b^6 c^5 + 168 a^7 b^5 c^5 - 92 a^8 b^5 c^4 + 20 a^2 b^4 c^7 + 8 a^2 b^5 c^6 + 82 a^2 b^6 c^5 + 6 a^2 b^7 c^4 \\
& + 8 a^2 b^8 c^3 - 44 a^2 b^9 c^2 - 16 a^3 b^2 c^8 - 40 a^3 b^3 c^7 - 104 a^3 b^4 c^6 - 132 a^3 b^5 c^5 + 34 a^3 b^6 c^4 + 72 a^3 b^7 c^3 + 460 a^3 b^8 c^2 + 82 a^4 b^2 c^7 \\
& + 174 a^4 b^3 c^6 + 41 a^4 b^4 c^5 - 149 a^4 b^5 c^4 - 660 a^4 b^6 c^3 - 900 a^4 b^7 c^2 - 90 a^5 b^2 c^6 + 96 a^5 b^3 c^5 + 541 a^5 b^4 c^4 + 1156 a^5 b^5 c^3 + 764 a^5 b^6 c^2 - 204 a^6 b^2 c^5 \\
& - 704 a^6 b^3 c^4 - 840 a^6 b^4 c^3 - 300 a^6 b^5 c^2 + 384 a^7 b^2 c^4 + 272 a^7 b^3 c^3 + 44 a^7 b^4 c^2 - 32 a^8 b^2 c^3 + 24 a^* b^{11} c)) / c^8 - (((2048 * (12 a^3 c^{11} - 28 a^4 c^{10} - 44 a^5 c^9 + 72 a^6 c^8 + 88 a^7 c^7 + 12 a^8 c^6 + b^5 c^9 - 4 b^6 c^8 + 10 b^7 c^7 - 20 b^8 c^6 + 29 b^9 c^5 - 30 b^{10} c^4 + 26 b^{11} c^3 - 12 b^{12} c^2 - 6 a^* b^3 c^{10} + 27 a^* b^4 c^9 - 72 a^* b^5 c^8 + 154 a^* b^6 c^7 - 238 a^* b^7 c^6 + 251 a^* b^8 c^5 - 228 a^* b^9 c^4 + 98 a^* b^{10} c^3 + 20 a^* b^{11} c^2 + 8 a^2 b^* c^{11} - 68 a^3 b^* c^{10} + 112 a^4 b^* c^9 + 100 a^5 b^* c^8 - 200 a^6 b^* c^7 - 96 a^7 b^* c^6 - 47 a^2 b^2 c^{10} + 145 a^2 b^3 c^9 - 354 a^2 b^4 c^8 + 612 a^2 b^5 c^7 - 655 a^2 b^6 c^6 + 635 a^2 b^7 c^5 - 202 a^2 b^8 c^4 - 222 a^2 b^9 c^3 + 4 a^2 b^{10} c^2 + 239 a^3 b^2 c^9 - 524 a^3 b^3 c^8 + 536 a^3 b^4 c^7 - 564 a^3 b^5 c^6 - 115 a^3 b^6 c^5 + 856 a^3 b^7 c^4 + 2 a^3 b^8 c^3 - 20 a^3 b^9 c^2 - 37 a^4 b^2 c^8 + 9 a^4 b^3 c^7 + 583 a^4 b^4 c^6 - 1362 a^4 b^5 c^5 - 152 a^4 b^6 c^4 + 156 a^4 b^7 c^3 + 8 a^4 b^8 c^2 - 399 a^5 b^2 c^7 + 904 a^5 b^3 c^6 + 394 a^5 b^4 c^5 - 388 a^5 b^5 c^4 - 60 a^5 b^6 c^3 - 340 a^6 b^2 c^6 + 364 a^6 b^3 c^5 + 136 a^6 b^4 c^4 - 100 a^7 b^2 c^5)) / c^8 - (((2048 \tan(x/2) * (8 a^* c^{14} - 64 a^2 c^{13} + 80 a^3 c^{12} + 168 a^4 c^{11} - 192 a^5 c^{10} - 136 a^6 c^9 + 72 a^7 c^8 - 2 b^2 c^{13} + 6 b^3 c^{12} - 17 b^4 c^{11} + 33 b^5 c^{10} - 49 b^6 c^9 + 61 b^7 c^8 - 52 b^8 c^7 + 36 b^9 c^6 - 24 b^{10} c^5 + 8 b^{11} c^4 + 84 a^* b^2 c^{12} - 178 a^* b^3 c^{11} + 295 a^* b^4 c^{10} - 416 a^* b^5 c^9 + 375 a^* b^6 c^8 - 308 a^* b^7 c^7 + 244 a^* b^8 c^6 - 72 a^* b^9 c^5 - 8 a^* b^{10} c^4 + 184 a^2 b^* c^{12} - 328 a^3 b^* c^{11} - 16 a^4 b^* c^{10} + 496 a^5 b^* c^9 - 88 a^6 b^* c^8 - 416 a^2 b^2 c^{11} + 770 a^2 b^3 c^{10} - 723 a^2 b^4 c^9 + 779 a^2 b^5 c^8 - 732 a^2 b^6 c^7 + 80 a^2 b^7 c^6 + 112 a^2 b^8 c^5 - 8 a^2 b^9 c^4 + 180 a^3 b^2 c^{10} - 494 a^3 b^3 c^9 + 521 a^3 b^4 c^8 + 572 a^3 b^5 c^7 - 424 a^3 b^6 c^6 + 56 a^3 b^7 c^5 + 8 a^3 b^8 c^4 + 234 a^4 b^2 c^9 - 1152 a^4 b^3 c^8 + 416 a^4 b^4 c^7 - 140 a^4 b^5 c^6 - 72 a^4 b^6 c^5 + 64 a^5 b^2 c^8 + 192 a^5 b^3 c^7 + 220 a^5 b^4 c^6 - 256 a^6 b^2 c^7 - 24 a^* b^* c^{13})) / c^8 - (((2048 * (16 a^3 c^{13} - 32 a^2 c^{14} + 176 a^4 c^{12} + 176 a^5 c^{11} + 48 a^6 c^{10} - 2 b^4 c^{11} + 2 + 6 b^5 c^{11} - 18 b^6 c^{10} + 26 b^7 c^9 - 12 b^8 c^8 + 16 a^* b^2 c^{13} - 40 a^* b^3 c^{12} + 122 a^* b^4 c^{11} - 192 a^* b^5 c^{10} + 74 a^* b^6 c^9 + 20 a^* b^7 c^8
\end{aligned}$$

$$\begin{aligned}
& + 64a^2b^3c^{13} - 144a^3b^2c^{12} - 352a^4b^3c^{11} - 144a^5b^2c^{10} - 204a^6b^3c^9 + 388a^7b^4c^8 - 50a^8b^5c^7 + 4a^9b^6c^6 - 260a^{10}b^7c^5 \\
& + 496a^{11}b^8c^4 + 10a^{12}b^9c^3 - 20a^{13}b^{10}c^2 - 148a^{14}b^{11}c + 116a^{15}b^{12} - 8a^{16}b^{13} + 44a^{17}b^{14} - 44a^{18}b^{15} \\
& )/c^8 - (1024\tan(x/2)(b^{2*2i} - a*c^{2i} + c^{2*1i})*(32*a*c^{16} - 64*a^2*c^{15} - 128*a^3*c^{14} + 64*a^4*c^{13} \\
& + 96*a^5*c^{12} - 8*b^2*c^{15} + 24*b^3*c^{14} - 32*b^4*c^{13} + 32*b^5*c^{12} - 24*b^6*c^{11} + 8*b^7*c^{10} + 144*a*b^2*c^{14} - 200*a^2*b^3*c^{13} \\
& + 184*a^3*b^4*c^{12} - 56*a^4*b^5*c^{11} - 8*a^5*b^6*c^{10} + 288*a^6*b^7*c^9 + 352*a^7*b^8*c^8 - 32*a^8*b^9*c^7 - 320*a^9*b^{10}c^6 \\
& + 26*a^{10}b^{11}c^5 - 300*a^{11}b^{12}c^4 + 26*a^{12}b^{13}c^3 - 300*a^{13}b^{14}c^2 + 26*a^{14}b^{15}c - 300*a^{15}b^{16}c^0) \\
& )/c^{11}*(b^{2*2i} - a*c^{2i} + c^{2*1i}))/((2*c^3)*(b^{2*2i} - a*c^{2i} + c^{2*1i}))/((2*c^3)*(b^{2*2i} - a*c^{2i} + c^{2*1i}))/((2*c^3)*(b^{2*2i} - a*c^{2i} + c^{2*1i}))/((2*c^3)*(b^{2*2i} - a*c^{2i} + c^{2*1i}))) \\
& + (((2048*\tan(x/2)*(20*a*b^{12} + 4*b^{12}*c - 4*b^{13} - 40*a^2*b^{11} + 40*a^3*b^{10} - 20*a^4*b^9 + 4*a^5*b^8 + 2*a^6*b^7 - 18*a^7*c^8 + 38*a^6*c^7 + 2*a^7*c^6 - 44*a^8*c^5 + 12*a^9*c^4 + b^8*c^5 - b^9*c^4 + 4*b^{10}*c^3 - 4*b^{11}*c^2 - 8*a*b^6*c^6 + 4*a*b^7*c^5 - 31*a*b^8*c^4 + 20*a*b^9*c^3 - 20*a*b^{10}*c^2 - 160*a^2*b^{10}*c + 320*a^3*b^9*c + 26*a^4*b^8*c - 300*a^4*b^8*c - 84*a^5*b^7*c + 136*a^5*b^7*c + 2*a^6*b^6*c - 24*a^6*b^6*c + 168*a^7*b^5*c - 92*a^8*b^4*c + 20*a^2*b^4*c^7 + 8*a^2*b^5*c^6 + 82*a^2*b^6*c^5 + 6*a^2*b^7*c^4 + 8*a^2*b^8*c^3 - 44*a^2*b^9*c^2 - 16*a^3*b^2*c^8 - 40*a^3*b^3*c^7 - 104*a^3*b^4*c^6 - 132*a^3*b^5*c^5 + 34*a^3*b^6*c^4 + 72*a^3*b^7*c^3 + 460*a^3*b^8*c^2 + 82*a^4*b^2*c^7 + 174*a^4*b^3*c^6 + 41*a^4*b^4*c^5 - 149*a^4*b^5*c^4 - 660*a^4*b^6*c^3 - 900*a^4*b^7*c^2 - 90*a^5*b^2*c^6 + 96*a^5*b^3*c^5 + 541*a^5*b^4*c^4 + 1156*a^5*b^5*c^3 + 764*a^5*b^6*c^2 - 204*a^6*b^2*c^5 - 704*a^6*b^3*c^4 - 840*a^6*b^4*c^3 - 300*a^6*b^5*c^2 + 384*a^7*b^2*c^4 + 272*a^7*b^3*c^3 + 44*a^7*b^4*c^2 - 32*a^8*b^2*c^3 + 24*a^8*b^3*c^2))/c^8 + (((2048*(12*a^3*c^{11} - 28*a^4*c^{10} - 44*a^5*c^9 + 72*a^6*c^8 + 88*a^7*c^7 + 12*a^8*c^6 + b^5*c^9 - 4*b^6*c^8 + 10*b^7*c^7 - 20*b^8*c^6 + 29*b^9*c^5 - 30*b^{10}*c^4 + 26*b^{11}*c^3 - 12*b^{12}*c^2 - 6*a*b^3*c^{10} + 27*a*b^4*c^9 - 72*a*b^5*c^8 + 154*a*b^6*c^7 - 238*a*b^7*c^6 + 251*a*b^8*c^5 - 228*a*b^9*c^4 + 98*a*b^{10}*c^3 + 20*a*b^{11}*c^2 + 8*a^2*b^3*c^{11} - 68*a^3*b^2*c^{10} + 112*a^4*b^3*c^9 + 100*a^5*b^4*c^8 - 200*a^6*b^5*c^7 - 96*a^7*b^6*c^6 - 47*a^2*b^2*c^{10} + 145*a^2*b^3*c^9 - 354*a^2*b^4*c^8 + 612*a^2*b^5*c^7 - 655*a^2*b^6*c^6 + 635*a^2*b^7*c^5 - 202*a^2*b^8*c^4 - 222*a^2*b^9*c^3 + 4*a^2*b^{10}*c^2 + 239*a^3*b^2*c^9 - 524*a^3*b^3*c^8 + 536*a^3*b^4*c^7 - 564*a^3*b^5*c^6 - 115*a^3*b^6*c^5 + 856*a^3*b^7*c^4 + 2*a^3*b^8*c^3 - 20*a^3*b^9*c^2 - 37*a^4*b^2*c^8 + 9*a^4*b^3*c^7 + 583*a^4*b^4*c^6 - 1362*a^4*b^5*c^5 - 152*a^4*b^6*c^4 + 156*a^4*b^7*c^3 + 8*a^4*b^8*c^2 - 399*a^5*b^2*c^7 + 904*a^5*b^3*c^6 + 394*a^5*b^4*c^5 - 388*a^5*b^5*c^4 - 60*a^5*b^6*c^3 - 340*a^6*b^2*c^6 + 364*a^6*b^3*c^5 + 136*a^6*b^4*c^4 - 100*a^7*b^2*c^5))/c^8 + (((2048*\tan(x/2)*(8*a^c^{14} - 64*a^2*c^{13} + 80*a^3*c^{12} + 168*a^4*c^{11} - 192*a^5*c^{10} - 136*a^6*c^9 + 72*a^7*c^8 - 2*b^2*c^{13} + 6*b^3*c^{12} - 17*b^4*c^{11} + 33*b^5*c^{10} - 49*b^6*c^9 + 61*b^7*c^8 - 52*b^8*c^7 + 36*b^9*c^6 - 24*b^{10}*c^5 + 8*b^{11}*c^4 + 84*a*b^2*c^{12} - 178*a*b^3*c^{11} + 295*a*b^4*c^{10} - 416*a*b^5*c^9 + 375*a*b^6*c^8 - 308*a*b^7*c^7 + 244*a*b^8*c^6 - 72*a*b^9*c^5 - 8*a
\end{aligned}$$

$$\begin{aligned}
& *b^{10}c^4 + 184a^2b^2c^{12} - 328a^3b^2c^{11} - 16a^4b^2c^{10} + 496a^5b^2c^9 \\
& - 88a^6b^2c^8 - 416a^2b^2c^{11} + 770a^2b^3c^{10} - 723a^2b^4c^9 + 7 \\
& 79a^2b^5c^8 - 732a^2b^6c^7 + 80a^2b^7c^6 + 112a^2b^8c^5 - 8a^2 \\
& *b^9c^4 + 180a^3b^2c^{10} - 494a^3b^3c^9 + 521a^3b^4c^8 + 572a^3b \\
& ^5c^7 - 424a^3b^6c^6 + 56a^3b^7c^5 + 8a^3b^8c^4 + 234a^4b^2c^9 \\
& - 1152a^4b^3c^8 + 416a^4b^4c^7 - 140a^4b^5c^6 - 72a^4b^6c^5 + \\
& 64a^5b^2c^8 + 192a^5b^3c^7 + 220a^5b^4c^6 - 256a^6b^2c^7 - 24a \\
& *b^2c^{13}))/c^8 + (((2048*(16a^3c^{13} - 32a^2c^{14} + 176a^4c^{12} + 176a^5 \\
& *c^{11} + 48a^6c^{10} - 2b^4c^{12} + 6b^5c^{11} - 18b^6c^{10} + 26b^7c^9 - \\
& 12b^8c^8 + 16a*b^2c^{13} - 40a*b^3c^{12} + 122a*b^4c^{11} - 192a*b^5c^{1 \\
& 0 + 74a*b^6c^9 + 20a*b^7c^8 + 64a^2b^2c^{13} - 144a^3b^2c^{12} - 352a^4* \\
& b^2c^{11} - 144a^5b^2c^{10} - 204a^2b^2c^{12} + 388a^2b^3c^{11} - 50a^2b^4* \\
& c^{10} - 182a^2b^5c^9 + 4a^2b^6c^8 - 260a^3b^2c^{11} + 496a^3b^3c^{1 \\
& 0 + 10a^3b^4c^9 - 20a^3b^5c^8 - 148a^4b^2c^{10} + 116a^4b^3c^9 + \\
& 8a^4b^4c^8 - 44a^5b^2c^9))/c^8 + (1024*\tan(x/2)*(b^2*2i - a*c*2i + c^ \\
& 2*1i)*(32a*c^{16} - 64a^2c^{15} - 128a^3c^{14} + 64a^4c^{13} + 96a^5c^{12} - \\
& 8b^2c^{15} + 24b^3c^{14} - 32b^4c^{13} + 32b^5c^{12} - 24b^6c^{11} + 8b^7 \\
& *c^{10} + 144a*b^2c^{14} - 200a*b^3c^{13} + 184a*b^4c^{12} - 56a*b^5c^{11} - \\
& 8a*b^6c^{10} + 288a^2b^2c^{14} + 352a^3b^2c^{13} - 32a^4b^2c^{12} - 320a^2b^ \\
& 2c^{13} + 8a^2b^3c^{12} + 96a^2b^4c^{11} - 8a^2b^5c^{10} - 272a^3b^2c^ \\
& 12 + 40a^3b^3c^{11} + 8a^3b^4c^{10} - 56a^4b^2c^{11} - 96a*b^2c^{15}))/c^1 \\
& 1)*(b^2*2i - a*c*2i + c^2*1i))/(2*c^3))*(b^2*2i - a*c*2i + c^2*1i))/(2*c^3) \\
& )*(b^2*2i - a*c*2i + c^2*1i))/(2*c^3))*(b^2*2i - a*c*2i + c^2*1i))/(2*c^3) \\
& )*(b^2*2i - a*c*2i + c^2*1i)*1i)/c^3
\end{aligned}$$



### 3.14 $\int \frac{\cos^3(x)}{a+b \cos(x)+c \cos^2(x)} dx$

Optimal result	209
Rubi [A] (verified)	210
Mathematica [A] (verified)	212
Maple [A] (verified)	212
Fricas [B] (verification not implemented)	213
Sympy [F(-1)]	213
Maxima [F]	213
Giac [B] (verification not implemented)	214
Mupad [B] (verification not implemented)	216

#### Optimal result

Integrand size = 19, antiderivative size = 299

$$\int \frac{\cos^3(x)}{a+b \cos(x)+c \cos^2(x)} dx$$

$$= -\frac{bx}{c^2} + \frac{2\left(b^2 - ac - \frac{b^3}{\sqrt{b^2-4ac}} + \frac{3abc}{\sqrt{b^2-4ac}}\right) \arctan\left(\frac{\sqrt{b-2c-\sqrt{b^2-4ac}} \tan\left(\frac{x}{2}\right)}{\sqrt{b+2c-\sqrt{b^2-4ac}}}\right)}{c^2 \sqrt{b-2c-\sqrt{b^2-4ac}} \sqrt{b+2c-\sqrt{b^2-4ac}}}$$

$$+ \frac{2\left(b^2 - ac + \frac{b^3}{\sqrt{b^2-4ac}} - \frac{3abc}{\sqrt{b^2-4ac}}\right) \arctan\left(\frac{\sqrt{b-2c+\sqrt{b^2-4ac}} \tan\left(\frac{x}{2}\right)}{\sqrt{b+2c+\sqrt{b^2-4ac}}}\right)}{c^2 \sqrt{b-2c+\sqrt{b^2-4ac}} \sqrt{b+2c+\sqrt{b^2-4ac}}} + \frac{\sin(x)}{c}$$

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

**Rubi [A] (verified)**

Time = 7.40 (sec) , antiderivative size = 299, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5,  $\frac{\text{number of rules}}{\text{integrand size}} = 0.263$ , Rules used = {3338, 2717, 3374, 2738, 211}

$$\int \frac{\cos^3(x)}{a + b \cos(x) + c \cos^2(x)} dx$$

$$= \frac{2 \left( \frac{3abc}{\sqrt{b^2-4ac}} - \frac{b^3}{\sqrt{b^2-4ac}} - ac + b^2 \right) \arctan \left( \frac{\tan(\frac{x}{2}) \sqrt{-\sqrt{b^2-4ac}+b-2c}}{\sqrt{-\sqrt{b^2-4ac}+b+2c}} \right)}{c^2 \sqrt{-\sqrt{b^2-4ac}+b-2c} \sqrt{-\sqrt{b^2-4ac}+b+2c}}$$

$$+ \frac{2 \left( -\frac{3abc}{\sqrt{b^2-4ac}} + \frac{b^3}{\sqrt{b^2-4ac}} - ac + b^2 \right) \arctan \left( \frac{\tan(\frac{x}{2}) \sqrt{\sqrt{b^2-4ac}+b-2c}}{\sqrt{\sqrt{b^2-4ac}+b+2c}} \right)}{c^2 \sqrt{\sqrt{b^2-4ac}+b-2c} \sqrt{\sqrt{b^2-4ac}+b+2c}} - \frac{bx}{c^2} + \frac{\sin(x)}{c}$$

[In] Int[Cos[x]^3/(a + b\*Cos[x] + c\*Cos[x]^2),x]

[Out] -((b\*x)/c^2) + (2\*(b^2 - a\*c - b^3/Sqrt[b^2 - 4\*a\*c] + (3\*a\*b\*c)/Sqrt[b^2 - 4\*a\*c])\*ArcTan[(Sqrt[b - 2\*c - Sqrt[b^2 - 4\*a\*c]]\*Tan[x/2])/Sqrt[b + 2\*c - Sqrt[b^2 - 4\*a\*c]])/(c^2\*Sqrt[b - 2\*c - Sqrt[b^2 - 4\*a\*c]]\*Sqrt[b + 2\*c - Sqrt[b^2 - 4\*a\*c]]) + (2\*(b^2 - a\*c + b^3/Sqrt[b^2 - 4\*a\*c] - (3\*a\*b\*c)/Sqrt[b^2 - 4\*a\*c])\*ArcTan[(Sqrt[b - 2\*c + Sqrt[b^2 - 4\*a\*c]]\*Tan[x/2])/Sqrt[b + 2\*c + Sqrt[b^2 - 4\*a\*c]])/(c^2\*Sqrt[b - 2\*c + Sqrt[b^2 - 4\*a\*c]]\*Sqrt[b + 2\*c + Sqrt[b^2 - 4\*a\*c]]) + Sin[x]/c

Rule 211

Int[((a\_) + (b\_.)\*(x\_)^2)^(-1), x\_Symbol] := Simp[(Rt[a/b, 2]/a)\*ArcTan[x/Rt[a/b, 2]], x] /; FreeQ[{a, b}, x] && PosQ[a/b]

Rule 2717

Int[sin[Pi/2 + (c\_.) + (d\_.)\*(x\_)], x\_Symbol] := Simp[Sin[c + d\*x]/d, x] /; FreeQ[{c, d}, x]

Rule 2738

Int[((a\_) + (b\_.)\*sin[Pi/2 + (c\_.) + (d\_.)\*(x\_)])^(-1), x\_Symbol] := With[{e = FreeFactors[Tan[(c + d\*x)/2], x]}, Dist[2\*(e/d), Subst[Int[1/(a + b + (a - b)\*e^2\*x^2), x], x, Tan[(c + d\*x)/2]/e], x] /; FreeQ[{a, b, c, d}, x] && NeQ[a^2 - b^2, 0]

Rule 3338

Int[cos[(d\_.) + (e\_.)\*(x\_)]^(m\_.)\*((a\_.) + cos[(d\_.) + (e\_.)\*(x\_)]^(n\_.)\*(b\_.) + cos[(d\_.) + (e\_.)\*(x\_)]^(n2\_.)\*(c\_.))^(p\_), x\_Symbol] := Int[ExpandTr

```

ig[cos[d + e*x]^m*(a + b*cos[d + e*x]^n + c*cos[d + e*x]^(2*n))^p, x] /
; FreeQ[{a, b, c, d, e}, x] && EqQ[n2, 2*n] && NeQ[b^2 - 4*a*c, 0] && Integ
ersQ[m, n, p]

```

### Rule 3374

```

Int[(cos[(d_.) + (e_.)*(x_.)]*(B_.) + (A_.))/((a_.) + cos[(d_.) + (e_.)*(x_.)]
*(b_.) + cos[(d_.) + (e_.)*(x_.)]^2*(c_.)), x_Symbol] :> Module[{q = Rt[b^2
- 4*a*c, 2]}, Dist[B + (b*B - 2*A*c)/q, Int[1/(b + q + 2*c*Cos[d + e*x]), x
], x] + Dist[B - (b*B - 2*A*c)/q, Int[1/(b - q + 2*c*Cos[d + e*x]), x], x]]
/; FreeQ[{a, b, c, d, e, A, B}, x] && NeQ[b^2 - 4*a*c, 0]

```

### Rubi steps

$$\begin{aligned}
\text{integral} &= \int \left( -\frac{b}{c^2} + \frac{\cos(x)}{c} + \frac{ab + b^2 \left(1 - \frac{ac}{b^2}\right) \cos(x)}{c^2 (a + b \cos(x) + c \cos^2(x))} \right) dx \\
&= -\frac{bx}{c^2} + \frac{\int \frac{ab + b^2 \left(1 - \frac{ac}{b^2}\right) \cos(x)}{a + b \cos(x) + c \cos^2(x)} dx}{c^2} + \frac{\int \cos(x) dx}{c} \\
&= -\frac{bx}{c^2} + \frac{\sin(x)}{c} + \frac{\left(b^2 - ac + \frac{b^3}{\sqrt{b^2 - 4ac}} - \frac{3abc}{\sqrt{b^2 - 4ac}}\right) \int \frac{1}{b + \sqrt{b^2 - 4ac} + 2c \cos(x)} dx}{c^2} \\
&\quad + \frac{\left(b^2 - ac - \frac{b^3}{\sqrt{b^2 - 4ac}} + \frac{3abc}{\sqrt{b^2 - 4ac}}\right) \int \frac{1}{b - \sqrt{b^2 - 4ac} + 2c \cos(x)} dx}{c^2} \\
&= -\frac{bx}{c^2} + \frac{\sin(x)}{c} \\
&\quad + \frac{\left(2\left(b^2 - ac + \frac{b^3}{\sqrt{b^2 - 4ac}} - \frac{3abc}{\sqrt{b^2 - 4ac}}\right)\right) \text{Subst}\left(\int \frac{1}{b + 2c + \sqrt{b^2 - 4ac} + (b - 2c + \sqrt{b^2 - 4ac})x^2} dx, x, \tan\left(\frac{x}{2}\right)\right)}{c^2} \\
&\quad + \frac{\left(2\left(b^2 - ac - \frac{b^3}{\sqrt{b^2 - 4ac}} + \frac{3abc}{\sqrt{b^2 - 4ac}}\right)\right) \text{Subst}\left(\int \frac{1}{b + 2c - \sqrt{b^2 - 4ac} + (b - 2c - \sqrt{b^2 - 4ac})x^2} dx, x, \tan\left(\frac{x}{2}\right)\right)}{c^2} \\
&= -\frac{bx}{c^2} + \frac{2\left(b^2 - ac - \frac{b^3}{\sqrt{b^2 - 4ac}} + \frac{3abc}{\sqrt{b^2 - 4ac}}\right) \arctan\left(\frac{\sqrt{b - 2c - \sqrt{b^2 - 4ac}} \tan\left(\frac{x}{2}\right)}{\sqrt{b + 2c - \sqrt{b^2 - 4ac}}}\right)}{c^2 \sqrt{b - 2c - \sqrt{b^2 - 4ac}} \sqrt{b + 2c - \sqrt{b^2 - 4ac}}} \\
&\quad + \frac{2\left(b^2 - ac + \frac{b^3}{\sqrt{b^2 - 4ac}} - \frac{3abc}{\sqrt{b^2 - 4ac}}\right) \arctan\left(\frac{\sqrt{b - 2c + \sqrt{b^2 - 4ac}} \tan\left(\frac{x}{2}\right)}{\sqrt{b + 2c + \sqrt{b^2 - 4ac}}}\right)}{c^2 \sqrt{b - 2c + \sqrt{b^2 - 4ac}} \sqrt{b + 2c + \sqrt{b^2 - 4ac}}} + \frac{\sin(x)}{c}
\end{aligned}$$

**Mathematica [A] (verified)**

Time = 0.47 (sec) , antiderivative size = 309, normalized size of antiderivative = 1.03

$$\int \frac{\cos^3(x)}{a + b \cos(x) + c \cos^2(x)} dx$$

$$= \frac{-bx - \frac{\sqrt{2}(b^3 - 3abc + b^2\sqrt{b^2 - 4ac} - ac\sqrt{b^2 - 4ac}) \operatorname{arctanh}\left(\frac{(b - 2c + \sqrt{b^2 - 4ac}) \tan\left(\frac{x}{2}\right)}{\sqrt{-2b^2 + 4c(a+c) - 2b\sqrt{b^2 - 4ac}}}\right)}{\sqrt{b^2 - 4ac}\sqrt{-b^2 + 2c(a+c) - b\sqrt{b^2 - 4ac}}}}{c^2} + \frac{\sqrt{2}(-b^3 + 3abc + b^2\sqrt{b^2 - 4ac} - ac\sqrt{b^2 - 4ac}) \operatorname{arctanh}\left(\frac{(b - 2c + \sqrt{b^2 - 4ac}) \tan\left(\frac{x}{2}\right)}{\sqrt{-2b^2 + 4c(a+c) - 2b\sqrt{b^2 - 4ac}}}\right)}{\sqrt{b^2 - 4ac}\sqrt{-b^2 + 2c(a+c) - b\sqrt{b^2 - 4ac}}}}{c^2}$$

[In] Integrate[Cos[x]^3/(a + b\*Cos[x] + c\*Cos[x]^2), x]

[Out]  $(-b*x) - (\operatorname{Sqrt}[2]*(b^3 - 3*a*b*c + b^2*\operatorname{Sqrt}[b^2 - 4*a*c] - a*c*\operatorname{Sqrt}[b^2 - 4*a*c])*\operatorname{ArcTanh}[\frac{(b - 2*c + \operatorname{Sqrt}[b^2 - 4*a*c])* \operatorname{Tan}[x/2]}{\operatorname{Sqrt}[-2*b^2 + 4*c*(a + c) - 2*b*\operatorname{Sqrt}[b^2 - 4*a*c]]}]) / (\operatorname{Sqrt}[b^2 - 4*a*c]*\operatorname{Sqrt}[-b^2 + 2*c*(a + c) - b*\operatorname{Sqrt}[b^2 - 4*a*c]]) + (\operatorname{Sqrt}[2]*(-b^3 + 3*a*b*c + b^2*\operatorname{Sqrt}[b^2 - 4*a*c] - a*c*\operatorname{Sqrt}[b^2 - 4*a*c])*\operatorname{ArcTanh}[\frac{(-b + 2*c + \operatorname{Sqrt}[b^2 - 4*a*c])* \operatorname{Tan}[x/2]}{\operatorname{Sqrt}[-2*b^2 + 4*c*(a + c) + 2*b*\operatorname{Sqrt}[b^2 - 4*a*c]]}]) / (\operatorname{Sqrt}[b^2 - 4*a*c]*\operatorname{Sqrt}[-b^2 + 2*c*(a + c) + b*\operatorname{Sqrt}[b^2 - 4*a*c]]) + c*\operatorname{Sin}[x]) / c^2$

**Maple [A] (verified)**

Time = 3.28 (sec) , antiderivative size = 331, normalized size of antiderivative = 1.11

method	result
default	$2(a-b+c) \left( \frac{(ab\sqrt{-4ac+b^2} + \sqrt{-4ac+b^2}ac - \sqrt{-4ac+b^2}b^2 - 2a^2c + ab^2 + 3cab - b^3) \operatorname{arctanh}\left(\frac{(-a+b-c) \tan\left(\frac{x}{2}\right)}{\sqrt{(\sqrt{-4ac+b^2}-a+c)(a-b+c)}}\right)}{2\sqrt{-4ac+b^2}(a-b+c)\sqrt{(\sqrt{-4ac+b^2}-a+c)(a-b+c)}} \right) + \frac{(ab\sqrt{-4ac+b^2} + \sqrt{-4ac+b^2}ac - \sqrt{-4ac+b^2}b^2 - 2a^2c + ab^2 + 3cab - b^3) \operatorname{arctanh}\left(\frac{(-a+b-c) \tan\left(\frac{x}{2}\right)}{\sqrt{(\sqrt{-4ac+b^2}-a+c)(a-b+c)}}\right)}{2\sqrt{-4ac+b^2}(a-b+c)\sqrt{(\sqrt{-4ac+b^2}-a+c)(a-b+c)}} \right) / c^2$
risch	Expression too large to display

[In] int(cos(x)^3/(a+cos(x)\*b+c\*cos(x)^2), x, method=\_RETURNVERBOSE)

[Out]  $2/c^2*(a-b+c)*(1/2*(a*b*(-4*a*c+b^2)^(1/2)+(-4*a*c+b^2)^(1/2)*a*c-(-4*a*c+b^2)^(1/2)*b^2-2*a^2*c+a*b^2+3*c*a*b-b^3)/(-4*a*c+b^2)^(1/2)/(a-b+c)/((( -4*a*c+b^2)^(1/2)-a+c)*(a-b+c))^(1/2)*\operatorname{arctanh}((-a+b-c)*\operatorname{tan}(1/2*x)/((( -4*a*c+b^2)^(1/2)-a+c)*(a-b+c))^(1/2))+1/2*(a*b*(-4*a*c+b^2)^(1/2)+(-4*a*c+b^2)^(1/2)*a*c-(-4*a*c+b^2)^(1/2)*b^2+2*a^2*c-a*b^2-3*c*a*b+b^3)/(-4*a*c+b^2)^(1/2)/(a-b+c)/((( -4*a*c+b^2)^(1/2)+a-c)*(a-b+c))^(1/2)*\operatorname{arctan}((a-b+c)*\operatorname{tan}(1/2*x)/((( -4*a*c+b^2)^(1/2)+a-c)*(a-b+c))^(1/2))-2/c^2*(-c*\operatorname{tan}(1/2*x)/(1+\operatorname{tan}(1/2*x)^2)+b*\operatorname{arctan}(\operatorname{tan}(1/2*x)))$

**Fricas [B] (verification not implemented)**

Leaf count of result is larger than twice the leaf count of optimal. 6529 vs. 2(255) = 510.  
Time = 2.35 (sec) , antiderivative size = 6529, normalized size of antiderivative = 21.84

$$\int \frac{\cos^3(x)}{a + b \cos(x) + c \cos^2(x)} dx = \text{Too large to display}$$

[In] integrate(cos(x)^3/(a+b\*cos(x)+c\*cos(x)^2),x, algorithm="fricas")

[Out] Too large to include

**Sympy [F(-1)]**

Timed out.

$$\int \frac{\cos^3(x)}{a + b \cos(x) + c \cos^2(x)} dx = \text{Timed out}$$

[In] integrate(cos(x)\*\*3/(a+b\*cos(x)+c\*cos(x)\*\*2),x)

[Out] Timed out

**Maxima [F]**

$$\int \frac{\cos^3(x)}{a + b \cos(x) + c \cos^2(x)} dx = \int \frac{\cos(x)^3}{c \cos(x)^2 + b \cos(x) + a} dx$$

[In] integrate(cos(x)^3/(a+b\*cos(x)+c\*cos(x)^2),x, algorithm="maxima")

[Out] 
$$-(c^2 \int (-2*(b^3 - a*b*c)*\cos(3*x)^2 + 4*(2*a^2*b + a*b*c)*\cos(2*x)^2 + 2*(b^3 - a*b*c)*\cos(x)^2 + 2*(b^3 - a*b*c)*\sin(3*x)^2 + 4*(2*a^2*b + a*b*c)*\sin(2*x)^2 + 2*(4*a*b^2 - a*c^2 - (2*a^2 - b^2)*c)*\sin(2*x)*\sin(x) + 2*(b^3 - a*b*c)*\sin(x)^2 + (2*a*b*c*\cos(2*x) + (b^2*c - a*c^2)*\cos(3*x) + (b^2*c - a*c^2)*\cos(x))*\cos(4*x) + (b^2*c - a*c^2 + 2*(4*a*b^2 - a*c^2 - (2*a^2 - b^2)*c)*\cos(2*x) + 4*(b^3 - a*b*c)*\cos(x))*\cos(3*x) + 2*(a*b*c + (4*a*b^2 - a*c^2 - (2*a^2 - b^2)*c)*\cos(x))*\cos(2*x) + (b^2*c - a*c^2)*\cos(x) + (2*a*b*c*\sin(2*x) + (b^2*c - a*c^2)*\sin(3*x) + (b^2*c - a*c^2)*\sin(x))*\sin(4*x) + 2*((4*a*b^2 - a*c^2 - (2*a^2 - b^2)*c)*\sin(2*x) + 2*(b^3 - a*b*c)*\sin(x))*\sin(3*x))/(c^4*\cos(4*x)^2 + 4*b^2*c^2*\cos(3*x)^2 + 4*b^2*c^2*\cos(x)^2 + c^4*\sin(4*x)^2 + 4*b^2*c^2*\sin(3*x)^2 + 4*b^2*c^2*\sin(x)^2 + 4*b*c^3*\cos(x) + c^4 + 4*(4*a^2*c^2 + 4*a*c^3 + c^4)*\cos(2*x)^2 + 4*(4*a^2*c^2 + 4*a*c^3 + c^4)*\sin(2*x)^2 + 8*(2*a*b*c^2 + b*c^3)*\sin(2*x)*\sin(x) + 2*(2*b*c^3*\cos(3*x) + 2*b*c^3*\cos(x) + c^4 + 2*(2*a*c^3 + c^4)*\cos(2*x))*\cos(4*x) + 4*(2*b^2*c^2*\cos(x) + b*c^3 + 2*(2*a*b*c^2 + b*c^3)*\cos(2*x))*\cos(3*x) + 4*(2*a*c^3 + c^4 + 2*(2*a*b*c^2 + b*c^3)*\cos(x))*\cos(2*x) + 4*(b*c^3*\sin(3*x) + b*c^3*\sin(x) + (2*a*c^3 + c^4)*\sin(2*x))*\sin(4*x) + 8*(b^2*c^2*\sin(x) + (2*a*b*c^2 + b*c^3)*\sin(2*x))*\sin(3*x)), x) + b*x - c*\sin(x))/c^2$$

**Giac [B] (verification not implemented)**

Leaf count of result is larger than twice the leaf count of optimal. 4810 vs.  $2(255) = 510$ .

Time = 3.24 (sec) , antiderivative size = 4810, normalized size of antiderivative = 16.09

$$\int \frac{\cos^3(x)}{a + b \cos(x) + c \cos^2(x)} dx = \text{Too large to display}$$

[In] integrate(cos(x)^3/(a+b\*cos(x)+c\*cos(x)^2),x, algorithm="giac")

[Out]  $-(2*a^3*b^4 - 6*a^2*b^5 - 2*a*b^6 + 6*b^7 - 12*a^4*b^2*c + 42*a^3*b^3*c + 24*a^2*b^4*c - 54*a*b^5*c - 8*b^6*c + 16*a^5*c^2 - 72*a^4*b*c^2 - 88*a^3*b^2*c^2 + 148*a^2*b^3*c^2 + 66*a*b^4*c^2 + 2*b^5*c^2 + 96*a^4*c^3 - 112*a^3*b*c^3 - 156*a^2*b^2*c^3 - 14*a*b^3*c^3 + 80*a^3*c^4 + 24*a^2*b*c^4 - 3*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}}*(a - b + c))*a^3*b^3 - \sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}}*(a - b + c))*a^2*b^4 + 7*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}}*(a - b + c))*a*b^5 + 5*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}}*(a - b + c))*b^6 + 12*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}}*(a - b + c))*a^4*b*c + 7*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}}*(a - b + c))*a^3*b^2*c - 44*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}}*(a - b + c))*a^2*b^3*c - 45*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}}*(a - b + c))*a*b^4*c - 6*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}}*(a - b + c))*b^5*c - 12*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}}*(a - b + c))*a^4*c^2 + 64*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}}*(a - b + c))*a^3*b*c^2 + 114*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}}*(a - b + c))*a^2*b^2*c^2 + 35*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}}*(a - b + c))*a*b^3*c^2 + 5*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}}*(a - b + c))*b^4*c^2 - 56*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}}*(a - b + c))*a^3*c^3 - 44*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}}*(a - b + c))*a^2*b*c^3 - 25*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}}*(a - b + c))*a*b^2*c^3 + 20*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}}*(a - b + c))*a^2*c^4 + 3*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}}*(a - b + c))*\sqrt{b^2 - 4*a*c}}*a^3*b^2 - 2*(b^2 - 4*a*c)*a^3*b^2 + \sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}}*(a - b + c))*\sqrt{b^2 - 4*a*c}}*a^2*b^3 + 6*(b^2 - 4*a*c)*a^2*b^3 - 7*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}}*(a - b + c))*\sqrt{b^2 - 4*a*c}}*a*b^4 + 2*(b^2 - 4*a*c)*a*b^4 - 5*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}}*(a - b + c))*\sqrt{b^2 - 4*a*c}}*b^5 - 6*(b^2 - 4*a*c)*b^5 - 6*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}}*(a - b + c))*\sqrt{b^2 - 4*a*c}}*(a - b + c))*\sqrt{b^2 - 4*a*c}}*a^4*c + 4*(b^2 - 4*a*c)*a^4*c - 5*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}}*(a - b + c))*\sqrt{b^2 - 4*a*c}}*a^3*b*c - 18*(b^2 - 4*a*c)*a^3*b*c + 30*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}}*(a - b + c))*\sqrt{b^2 - 4*a*c}}*a^2*b^2*c - 16*(b^2 - 4*a*c)*a^2*b^2*c + 35*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}}*(a - b + c))*\sqrt{b^2 - 4*a*c}}*a*b^3*c + 30*(b^2 - 4*a*c)*a*b^3*c + 6*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}}*(a - b + c))*\sqrt{b^2 - 4*a*c}}*b^4*c + 8*(b^2 - 4*a$

$$\begin{aligned}
& *c)*b^4*c - 28*\text{sqrt}(a^2 - a*b + b*c - c^2 + \text{sqrt}(b^2 - 4*a*c))*(a - b + c))* \\
& \text{sqrt}(b^2 - 4*a*c)*a^3*c^2 + 24*(b^2 - 4*a*c)*a^3*c^2 - 54*\text{sqrt}(a^2 - a*b + \\
& b*c - c^2 + \text{sqrt}(b^2 - 4*a*c))*(a - b + c))*\text{sqrt}(b^2 - 4*a*c)*a^2*b*c^2 - 28 \\
& *(b^2 - 4*a*c)*a^2*b*c^2 - 23*\text{sqrt}(a^2 - a*b + b*c - c^2 + \text{sqrt}(b^2 - 4*a*c) \\
& )*(a - b + c))*\text{sqrt}(b^2 - 4*a*c)*a*b^2*c^2 - 34*(b^2 - 4*a*c)*a*b^2*c^2 - 5 \\
& *\text{sqrt}(a^2 - a*b + b*c - c^2 + \text{sqrt}(b^2 - 4*a*c))*(a - b + c))*\text{sqrt}(b^2 - 4*a \\
& *c)*b^3*c^2 - 2*(b^2 - 4*a*c)*b^3*c^2 + 10*\text{sqrt}(a^2 - a*b + b*c - c^2 + \text{sqr} \\
& \text{t}(b^2 - 4*a*c))*(a - b + c))*\text{sqrt}(b^2 - 4*a*c)*a^2*c^3 + 20*(b^2 - 4*a*c)*a^ \\
& 2*c^3 + 15*\text{sqrt}(a^2 - a*b + b*c - c^2 + \text{sqrt}(b^2 - 4*a*c))*(a - b + c))*\text{sqrt} \\
& (b^2 - 4*a*c)*a*b*c^3 + 6*(b^2 - 4*a*c)*a*b*c^3)*(pi*\text{floor}(1/2*x/pi + 1/2) \\
& + \text{arctan}(2*\text{sqrt}(1/2)*\text{tan}(1/2*x)/\text{sqrt}((2*a*c^2 - 2*c^3 + \text{sqrt}(-4*(a*c^2 + b* \\
& c^2 + c^3)*(a*c^2 - b*c^2 + c^3) + 4*(a*c^2 - c^3)^2))/(a*c^2 - b*c^2 + c^3 \\
& )))\text{abs}(a - b + c)/(3*a^5*b^2*c^2 - 5*a^4*b^3*c^2 - 6*a^3*b^4*c^2 + 10*a^2 \\
& *b^5*c^2 + 3*a*b^6*c^2 - 5*b^7*c^2 - 12*a^6*c^3 + 20*a^5*b*c^3 + 47*a^4*b^2 \\
& *c^3 - 60*a^3*b^3*c^3 - 46*a^2*b^4*c^3 + 40*a*b^5*c^3 + 11*b^6*c^3 - 92*a^5 \\
& *c^4 + 80*a^4*b*c^4 + 182*a^3*b^2*c^4 - 94*a^2*b^3*c^4 - 78*a*b^4*c^4 - 6*b \\
& ^5*c^4 - 184*a^4*c^5 + 56*a^3*b*c^5 + 166*a^2*b^2*c^5 + 36*a*b^3*c^5 - 6*b^ \\
& 4*c^5 - 120*a^3*c^6 - 48*a^2*b*c^6 + 23*a*b^2*c^6 + 11*b^3*c^6 + 4*a^2*c^7 \\
& - 44*a*b*c^7 - 5*b^2*c^7 + 20*a*c^8) + (2*a^3*b^4 - 6*a^2*b^5 - 2*a*b^6 + 6 \\
& *b^7 - 12*a^4*b^2*c + 42*a^3*b^3*c + 24*a^2*b^4*c - 54*a*b^5*c - 8*b^6*c + \\
& 16*a^5*c^2 - 72*a^4*b*c^2 - 88*a^3*b^2*c^2 + 148*a^2*b^3*c^2 + 66*a*b^4*c^2 \\
& + 2*b^5*c^2 + 96*a^4*c^3 - 112*a^3*b*c^3 - 156*a^2*b^2*c^3 - 14*a*b^3*c^3 \\
& + 80*a^3*c^4 + 24*a^2*b*c^4 + 3*\text{sqrt}(a^2 - a*b + b*c - c^2 - \text{sqrt}(b^2 - 4*a \\
& *c))*(a - b + c))*a^3*b^3 + \text{sqrt}(a^2 - a*b + b*c - c^2 - \text{sqrt}(b^2 - 4*a*c))* \\
& (a - b + c))*a^2*b^4 - 7*\text{sqrt}(a^2 - a*b + b*c - c^2 - \text{sqrt}(b^2 - 4*a*c))*(a - \\
& b + c))*a*b^5 - 5*\text{sqrt}(a^2 - a*b + b*c - c^2 - \text{sqrt}(b^2 - 4*a*c))*(a - b + \\
& c))*b^6 - 12*\text{sqrt}(a^2 - a*b + b*c - c^2 - \text{sqrt}(b^2 - 4*a*c))*(a - b + c))*a^ \\
& 4*b*c - 7*\text{sqrt}(a^2 - a*b + b*c - c^2 - \text{sqrt}(b^2 - 4*a*c))*(a - b + c))*a^3*b \\
& ^2*c + 44*\text{sqrt}(a^2 - a*b + b*c - c^2 - \text{sqrt}(b^2 - 4*a*c))*(a - b + c))*a^2*b \\
& ^3*c + 45*\text{sqrt}(a^2 - a*b + b*c - c^2 - \text{sqrt}(b^2 - 4*a*c))*(a - b + c))*a*b^4 \\
& *c + 6*\text{sqrt}(a^2 - a*b + b*c - c^2 - \text{sqrt}(b^2 - 4*a*c))*(a - b + c))*b^5*c + \\
& 12*\text{sqrt}(a^2 - a*b + b*c - c^2 - \text{sqrt}(b^2 - 4*a*c))*(a - b + c))*a^4*c^2 - 64 \\
& *\text{sqrt}(a^2 - a*b + b*c - c^2 - \text{sqrt}(b^2 - 4*a*c))*(a - b + c))*a^3*b*c^2 - 11 \\
& 4*\text{sqrt}(a^2 - a*b + b*c - c^2 - \text{sqrt}(b^2 - 4*a*c))*(a - b + c))*a^2*b^2*c^2 - \\
& 35*\text{sqrt}(a^2 - a*b + b*c - c^2 - \text{sqrt}(b^2 - 4*a*c))*(a - b + c))*a*b^3*c^2 - \\
& 5*\text{sqrt}(a^2 - a*b + b*c - c^2 - \text{sqrt}(b^2 - 4*a*c))*(a - b + c))*b^4*c^2 + 56 \\
& *\text{sqrt}(a^2 - a*b + b*c - c^2 - \text{sqrt}(b^2 - 4*a*c))*(a - b + c))*a^3*c^3 + 44*s \\
& \text{qrt}(a^2 - a*b + b*c - c^2 - \text{sqrt}(b^2 - 4*a*c))*(a - b + c))*a^2*b*c^3 + 25*s \\
& \text{qrt}(a^2 - a*b + b*c - c^2 - \text{sqrt}(b^2 - 4*a*c))*(a - b + c))*a*b^2*c^3 - 20*s \\
& \text{qrt}(a^2 - a*b + b*c - c^2 - \text{sqrt}(b^2 - 4*a*c))*(a - b + c))*a^2*c^4 + 3*\text{sqrt} \\
& (a^2 - a*b + b*c - c^2 - \text{sqrt}(b^2 - 4*a*c))*(a - b + c))*\text{sqrt}(b^2 - 4*a*c)*a \\
& ^3*b^2 - 2*(b^2 - 4*a*c)*a^3*b^2 + \text{sqrt}(a^2 - a*b + b*c - c^2 - \text{sqrt}(b^2 - \\
& 4*a*c))*(a - b + c))*\text{sqrt}(b^2 - 4*a*c)*a^2*b^3 + 6*(b^2 - 4*a*c)*a^2*b^3 - 7 \\
& *\text{sqrt}(a^2 - a*b + b*c - c^2 - \text{sqrt}(b^2 - 4*a*c))*(a - b + c))*\text{sqrt}(b^2 - 4*a \\
& *c)*a*b^4 + 2*(b^2 - 4*a*c)*a*b^4 - 5*\text{sqrt}(a^2 - a*b + b*c - c^2 - \text{sqrt}(b^2
\end{aligned}$$

```

- 4*a*c)*(a - b + c))*sqrt(b^2 - 4*a*c)*b^5 - 6*(b^2 - 4*a*c)*b^5 - 6*sqrt
(a^2 - a*b + b*c - c^2 - sqrt(b^2 - 4*a*c))*(a - b + c))*sqrt(b^2 - 4*a*c)*a
^4*c + 4*(b^2 - 4*a*c)*a^4*c - 5*sqrt(a^2 - a*b + b*c - c^2 - sqrt(b^2 - 4*
a*c))*(a - b + c))*sqrt(b^2 - 4*a*c)*a^3*b*c - 18*(b^2 - 4*a*c)*a^3*b*c + 30
*sqrt(a^2 - a*b + b*c - c^2 - sqrt(b^2 - 4*a*c))*(a - b + c))*sqrt(b^2 - 4*a
*c)*a^2*b^2*c - 16*(b^2 - 4*a*c)*a^2*b^2*c + 35*sqrt(a^2 - a*b + b*c - c^2
- sqrt(b^2 - 4*a*c))*(a - b + c))*sqrt(b^2 - 4*a*c)*a*b^3*c + 30*(b^2 - 4*a*
c)*a*b^3*c + 6*sqrt(a^2 - a*b + b*c - c^2 - sqrt(b^2 - 4*a*c))*(a - b + c))*
sqrt(b^2 - 4*a*c)*b^4*c + 8*(b^2 - 4*a*c)*b^4*c - 28*sqrt(a^2 - a*b + b*c -
c^2 - sqrt(b^2 - 4*a*c))*(a - b + c))*sqrt(b^2 - 4*a*c)*a^3*c^2 + 24*(b^2 -
4*a*c)*a^3*c^2 - 54*sqrt(a^2 - a*b + b*c - c^2 - sqrt(b^2 - 4*a*c))*(a - b
+ c))*sqrt(b^2 - 4*a*c)*a^2*b*c^2 - 28*(b^2 - 4*a*c)*a^2*b*c^2 - 23*sqrt(a^
2 - a*b + b*c - c^2 - sqrt(b^2 - 4*a*c))*(a - b + c))*sqrt(b^2 - 4*a*c)*a*b
^2*c^2 - 34*(b^2 - 4*a*c)*a*b^2*c^2 - 5*sqrt(a^2 - a*b + b*c - c^2 - sqrt(b^
2 - 4*a*c))*(a - b + c))*sqrt(b^2 - 4*a*c)*b^3*c^2 - 2*(b^2 - 4*a*c)*b^3*c^2
+ 10*sqrt(a^2 - a*b + b*c - c^2 - sqrt(b^2 - 4*a*c))*(a - b + c))*sqrt(b^2
- 4*a*c)*a^2*c^3 + 20*(b^2 - 4*a*c)*a^2*c^3 + 15*sqrt(a^2 - a*b + b*c - c^2
- sqrt(b^2 - 4*a*c))*(a - b + c))*sqrt(b^2 - 4*a*c)*a*b*c^3 + 6*(b^2 - 4*a*
c)*a*b*c^3)*(pi*floor(1/2*x/pi + 1/2) + arctan(2*sqrt(1/2)*tan(1/2*x)/sqrt(
(2*a*c^2 - 2*c^3 - sqrt(-4*(a*c^2 + b*c^2 + c^3))*(a*c^2 - b*c^2 + c^3) + 4*
(a*c^2 - c^3)^2))/(a*c^2 - b*c^2 + c^3)))*abs(a - b + c)/(3*a^5*b^2*c^2 -
5*a^4*b^3*c^2 - 6*a^3*b^4*c^2 + 10*a^2*b^5*c^2 + 3*a*b^6*c^2 - 5*b^7*c^2 -
12*a^6*c^3 + 20*a^5*b*c^3 + 47*a^4*b^2*c^3 - 60*a^3*b^3*c^3 - 46*a^2*b^4*c^
3 + 40*a*b^5*c^3 + 11*b^6*c^3 - 92*a^5*c^4 + 80*a^4*b*c^4 + 182*a^3*b^2*c^4
- 94*a^2*b^3*c^4 - 78*a*b^4*c^4 - 6*b^5*c^4 - 184*a^4*c^5 + 56*a^3*b*c^5 +
166*a^2*b^2*c^5 + 36*a*b^3*c^5 - 6*b^4*c^5 - 120*a^3*c^6 - 48*a^2*b*c^6 +
23*a*b^2*c^6 + 11*b^3*c^6 + 4*a^2*c^7 - 44*a*b*c^7 - 5*b^2*c^7 + 20*a*c^8)
- b*x/c^2 + 2*tan(1/2*x)/((tan(1/2*x))^2 + 1)*c)

```

## Mupad [B] (verification not implemented)

Time = 14.65 (sec) , antiderivative size = 29362, normalized size of antiderivative = 98.20

$$\int \frac{\cos^3(x)}{a + b \cos(x) + c \cos^2(x)} dx = \text{Too large to display}$$

[In] int(cos(x)^3/(a + b\*cos(x) + c\*cos(x)^2),x)

```

[Out] sin(x)/c - atan(((((((8192*(4*a^2*c^10 - 4*a^3*c^9 - 20*a^4*c^8 - 12*a^5*c^
7 + b^4*c^8 - 5*b^5*c^7 + 7*b^6*c^6 - 3*b^7*c^5 - 5*a*b^2*c^9 + 31*a*b^3*c^
8 - 46*a*b^4*c^7 + 15*a*b^5*c^6 + 5*a*b^6*c^5 - 44*a^2*b*c^9 - 64*a^3*b*c^8
- 28*a^4*b*c^7 - 8*a^5*b*c^6 + 73*a^2*b^2*c^8 + 4*a^2*b^3*c^7 - 40*a^2*b^4
*c^6 + a^2*b^5*c^5 + 85*a^3*b^2*c^7 + 3*a^3*b^3*c^6 - 5*a^3*b^4*c^5 + 23*a^
4*b^2*c^6 + 2*a^4*b^3*c^5)))/c^4 - (8192*tan(x/2)*((b^8 - a^2*b^6 + 8*a^4*c^
4 + 8*a^5*c^3 + b^5*(-(4*a*c - b^2)^3)^(1/2) + 8*a^3*b^4*c - a^2*b^3*(-(4*a

```



$$\begin{aligned}
& *c - b^2)^3)^{(1/2)} + 33a^2b^4c^2 - 38a^3b^2c^3 - 18a^4b^2c^2 - 10* \\
& a*b^6*c + 3a^2*b*c^2*(-(4*a*c - b^2)^3)^{(1/2)} - 4*a*b^3*c*(-(4*a*c - b^2)^ \\
& 3)^{(1/2)} + 2*a^3*b*c*(-(4*a*c - b^2)^3)^{(1/2))}/(2*(16*a^2*c^8 + 32*a^3*c^7 \\
& + 16*a^4*c^6 + b^4*c^6 - b^6*c^4 - 8*a*b^2*c^7 + 10*a*b^4*c^5 - 32*a^2*b^2* \\
& c^6 + a^2*b^4*c^4 - 8*a^3*b^2*c^5)))^{(1/2)}*(8*a*c^{12} - 16*a^2*c^{11} - 32*a^3 \\
& *c^{10} + 16*a^4*c^9 + 24*a^5*c^8 - 2*b^2*c^{11} + 6*b^3*c^{10} - 8*b^4*c^9 + 8*b \\
& ^5*c^8 - 6*b^6*c^7 + 2*b^7*c^6 + 36*a*b^2*c^{10} - 50*a*b^3*c^9 + 46*a*b^4*c^ \\
& 8 - 14*a*b^5*c^7 - 2*a*b^6*c^6 + 72*a^2*b*c^{10} + 88*a^3*b*c^9 - 8*a^4*b*c^8 \\
& - 80*a^2*b^2*c^9 + 2*a^2*b^3*c^8 + 24*a^2*b^4*c^7 - 2*a^2*b^5*c^6 - 68*a^3 \\
& *b^2*c^8 + 10*a^3*b^3*c^7 + 2*a^3*b^4*c^6 - 14*a^4*b^2*c^7 - 24*a*b*c^{11}))/ \\
& c^4)*((b^8 - a^2*b^6 + 8*a^4*c^4 + 8*a^5*c^3 + b^5*(-(4*a*c - b^2)^3)^{(1/2)} \\
& + 8*a^3*b^4*c - a^2*b^3*(-(4*a*c - b^2)^3)^{(1/2)} + 33*a^2*b^4*c^2 - 38*a^3 \\
& *b^2*c^3 - 18*a^4*b^2*c^2 - 10*a*b^6*c + 3a^2*b*c^2*(-(4*a*c - b^2)^3)^{(1/2)} \\
& - 4*a*b^3*c*(-(4*a*c - b^2)^3)^{(1/2)} + 2*a^3*b*c*(-(4*a*c - b^2)^3)^{(1/2)} \\
& ))/(2*(16*a^2*c^8 + 32*a^3*c^7 + 16*a^4*c^6 + b^4*c^6 - b^6*c^4 - 8*a*b^2*c \\
& ^7 + 10*a*b^4*c^5 - 32*a^2*b^2*c^6 + a^2*b^4*c^4 - 8*a^3*b^2*c^5)))^{(1/2)} + \\
& (8192*\tan(x/2)*(2*a^3*c^8 - 2*a^4*c^7 + 6*a^5*c^6 + 10*a^6*c^5 + 2*b^4*c^7 \\
& - 6*b^5*c^6 + 8*b^6*c^5 - 8*b^7*c^4 + 6*b^8*c^3 - 2*b^9*c^2 - 8*a*b^2*c^8 \\
& + 24*a*b^3*c^7 - 38*a*b^4*c^6 + 56*a*b^5*c^5 - 50*a*b^6*c^4 + 14*a*b^7*c^3 \\
& + 2*a*b^8*c^2 + 18*a^3*b*c^7 + 12*a^4*b*c^6 - 22*a^5*b*c^5 + 23*a^2*b^2*c^7 \\
& - 99*a^2*b^3*c^6 + 93*a^2*b^4*c^5 + 7*a^2*b^5*c^4 - 24*a^2*b^6*c^3 + 2*a^2 \\
& *b^7*c^2 + 37*a^3*b^2*c^6 - 122*a^3*b^3*c^5 + 59*a^3*b^4*c^4 - 10*a^3*b^5*c \\
& ^3 - 2*a^3*b^6*c^2 + 11*a^4*b^2*c^5 + 15*a^4*b^3*c^4 + 14*a^4*b^4*c^3 - 27* \\
& a^5*b^2*c^4))/c^4)*((b^8 - a^2*b^6 + 8*a^4*c^4 + 8*a^5*c^3 + b^5*(-(4*a*c - \\
& b^2)^3)^{(1/2)} + 8*a^3*b^4*c - a^2*b^3*(-(4*a*c - b^2)^3)^{(1/2)} + 33*a^2*b^ \\
& 4*c^2 - 38*a^3*b^2*c^3 - 18*a^4*b^2*c^2 - 10*a*b^6*c + 3a^2*b*c^2*(-(4*a*c \\
& - b^2)^3)^{(1/2)} - 4*a*b^3*c*(-(4*a*c - b^2)^3)^{(1/2)} + 2*a^3*b*c*(-(4*a*c \\
& - b^2)^3)^{(1/2))}/(2*(16*a^2*c^8 + 32*a^3*c^7 + 16*a^4*c^6 + b^4*c^6 - b^6*c \\
& ^4 - 8*a*b^2*c^7 + 10*a*b^4*c^5 - 32*a^2*b^2*c^6 + a^2*b^4*c^4 - 8*a^3*b^2* \\
& c^5)))^{(1/2)} + (8192*(2*a^5*c^5 - a^4*c^6 - 3*b^9*c + 3*a^6*c^4 + b^6*c^4 - \\
& 4*b^7*c^3 + 6*b^8*c^2 - 5*a*b^4*c^5 + 23*a*b^5*c^4 - 38*a*b^6*c^3 + 16*a*b \\
& ^7*c^2 + a^2*b^7*c - 5*a^3*b^6*c + 6*a^4*b*c^5 + 2*a^4*b^5*c + 10*a^5*b*c^4 \\
& + 8*a^6*b*c^3 + 4*a^2*b^2*c^6 - 28*a^2*b^3*c^5 + 57*a^2*b^4*c^4 - 3*a^2*b^ \\
& 5*c^3 - 41*a^2*b^6*c^2 - 3*a^3*b^2*c^5 - 55*a^3*b^3*c^4 + 91*a^3*b^4*c^3 + \\
& 4*a^3*b^5*c^2 - 24*a^4*b^2*c^4 - 36*a^4*b^3*c^3 + 25*a^4*b^4*c^2 - 20*a^5*b \\
& ^2*c^3 - 10*a^5*b^3*c^2 + 5*a*b^8*c))/c^4)*((b^8 - a^2*b^6 + 8*a^4*c^4 + 8* \\
& a^5*c^3 + b^5*(-(4*a*c - b^2)^3)^{(1/2)} + 8*a^3*b^4*c - a^2*b^3*(-(4*a*c - b \\
& ^2)^3)^{(1/2)} + 33*a^2*b^4*c^2 - 38*a^3*b^2*c^3 - 18*a^4*b^2*c^2 - 10*a*b^6* \\
& c + 3a^2*b*c^2*(-(4*a*c - b^2)^3)^{(1/2)} - 4*a*b^3*c*(-(4*a*c - b^2)^3)^{(1/2)} \\
& + 2*a^3*b*c*(-(4*a*c - b^2)^3)^{(1/2))}/(2*(16*a^2*c^8 + 32*a^3*c^7 + 16*a \\
& ^4*c^6 + b^4*c^6 - b^6*c^4 - 8*a*b^2*c^7 + 10*a*b^4*c^5 - 32*a^2*b^2*c^6 + \\
& a^2*b^4*c^4 - 8*a^3*b^2*c^5)))^{(1/2)} - (8192*\tan(x/2)*(5*a*b^8 + b^8*c - b^ \\
& 9 - 10*a^2*b^7 + 10*a^3*b^6 - 5*a^4*b^5 + a^5*b^4 + a^6*c^3 + a^7*c^2 - 6*a \\
& *b^6*c^2 - 20*a^2*b^6*c + 40*a^3*b^5*c - 35*a^4*b^4*c + 14*a^5*b^3*c - a^6* \\
& b*c^2 - 2*a^6*b^2*c + 9*a^2*b^4*c^3 + 11*a^2*b^5*c^2 - 2*a^3*b^2*c^4 - 18*a
\end{aligned}$$

$$\begin{aligned}
& \sqrt[3]{b^3c^3 + 5a^3b^4c^2 + 10a^4b^2c^3 - 20a^4b^3c^2 + 10a^5b^2c^2 + 2a^6b^7c} / c^4 * ((b^8 - a^2b^6 + 8a^4c^4 + 8a^5c^3 + b^5 * (-4ac - b^2)^3)^{1/2} + 8a^3b^4c - a^2b^3 * (-4ac - b^2)^3)^{1/2} + 33a^2 \\
& * b^4c^2 - 38a^3b^2c^3 - 18a^4b^2c^2 - 10a^5b^6c + 3a^2b^3c^2 * (-4ac - b^2)^3)^{1/2} - 4a^3b^3c * (-4ac - b^2)^3)^{1/2} + 2a^3b^3c * (-4ac - b^2)^3)^{1/2} / (2 * (16a^2c^8 + 32a^3c^7 + 16a^4c^6 + b^4c^6 - b^6c^4 - 8a^2b^2c^7 + 10a^3b^4c^5 - 32a^2b^2c^6 + a^2b^4c^4 - 8a^3b^2c^5))^{1/2} * i - (((((8192 * (4a^2c^{10} - 4a^3c^9 - 20a^4c^8 - 12a^5c^7 + b^4c^8 - 5b^5c^7 + 7b^6c^6 - 3b^7c^5 - 5a^2b^2c^9 + 31a^3b^3c^8 - 46a^4b^4c^7 + 15a^5b^5c^6 + 5a^6b^6c^5 - 44a^2b^3c^9 - 64a^3b^4c^8 - 28a^4b^5c^7 - 8a^5b^6c^6 + 73a^2b^2c^8 + 4a^2b^3c^7 - 40a^2b^4c^6 + a^2b^5c^5 + 85a^3b^2c^7 + 3a^3b^3c^6 - 5a^3b^4c^5 + 23a^4b^2c^6 + 2a^4b^3c^5)) / c^4 + (8192 * \tan(x/2) * ((b^8 - a^2b^6 + 8a^4c^4 + 8a^5c^3 + b^5 * (-4ac - b^2)^3)^{1/2} + 8a^3b^4c - a^2b^3 * (-4ac - b^2)^3)^{1/2} + 33a^2b^4c^2 - 38a^3b^2c^3 - 18a^4b^2c^2 - 10a^5b^6c + 3a^2b^3c^2 * (-4ac - b^2)^3)^{1/2} - 4a^3b^3c * (-4ac - b^2)^3)^{1/2} + 2a^3b^3c * (-4ac - b^2)^3)^{1/2} / (2 * (16a^2c^8 + 32a^3c^7 + 16a^4c^6 + b^4c^6 - b^6c^4 - 8a^2b^2c^7 + 10a^3b^4c^5 - 32a^2b^2c^6 + a^2b^4c^4 - 8a^3b^2c^5))^{1/2} * (8a^2c^{12} - 16a^2c^{11} - 32a^3c^{10} + 16a^4c^9 + 24a^5c^8 - 2b^2c^{11} + 6b^3c^{10} - 8b^4c^9 + 8b^5c^8 - 6b^6c^7 + 2b^7c^6 + 36a^2b^2c^{10} - 50a^2b^3c^9 + 46a^2b^4c^8 - 14a^2b^5c^7 - 2a^2b^6c^6 + 72a^2b^7c^5 + 88a^3b^3c^9 - 8a^4b^4c^8 - 80a^4b^5c^7 + 2a^2b^3c^8 + 24a^2b^4c^7 - 2a^2b^5c^6 - 68a^3b^2c^8 + 10a^3b^3c^7 + 2a^3b^4c^6 - 14a^4b^2c^7 - 24a^4b^3c^6 - 14a^4b^4c^5 - 24a^4b^5c^4 - 24a^4b^6c^3 - 24a^4b^7c^2 - 24a^4b^8c^1) / c^4 * ((b^8 - a^2b^6 + 8a^4c^4 + 8a^5c^3 + b^5 * (-4ac - b^2)^3)^{1/2} + 8a^3b^4c - a^2b^3 * (-4ac - b^2)^3)^{1/2} + 33a^2b^4c^2 - 38a^3b^2c^3 - 18a^4b^2c^2 - 10a^5b^6c + 3a^2b^3c^2 * (-4ac - b^2)^3)^{1/2} - 4a^3b^3c * (-4ac - b^2)^3)^{1/2} + 2a^3b^3c * (-4ac - b^2)^3)^{1/2} / (2 * (16a^2c^8 + 32a^3c^7 + 16a^4c^6 + b^4c^6 - b^6c^4 - 8a^2b^2c^7 + 10a^3b^4c^5 - 32a^2b^2c^6 + a^2b^4c^4 - 8a^3b^2c^5))^{1/2} - (8192 * \tan(x/2) * (2a^3c^8 - 2a^4c^7 + 6a^5c^6 + 10a^6c^5 + 2b^4c^7 - 6b^5c^6 + 8b^6c^5 - 8b^7c^4 + 6b^8c^3 - 2b^9c^2 - 8a^2b^2c^8 + 24a^2b^3c^7 - 38a^2b^4c^6 + 56a^2b^5c^5 - 50a^2b^6c^4 + 14a^2b^7c^3 + 2a^2b^8c^2 + 18a^3b^3c^7 + 12a^4b^4c^6 - 22a^5b^5c^5 + 23a^2b^2c^7 - 99a^2b^3c^6 + 93a^2b^4c^5 + 7a^2b^5c^4 - 24a^2b^6c^3 + 2a^2b^7c^2 + 37a^3b^2c^6 - 122a^3b^3c^5 + 59a^3b^4c^4 - 10a^3b^5c^3 - 2a^3b^6c^2 + 11a^4b^2c^5 + 15a^4b^3c^4 + 14a^4b^4c^3 - 27a^5b^2c^4)) / c^4 * ((b^8 - a^2b^6 + 8a^4c^4 + 8a^5c^3 + b^5 * (-4ac - b^2)^3)^{1/2} + 8a^3b^4c - a^2b^3 * (-4ac - b^2)^3)^{1/2} + 33a^2b^4c^2 - 38a^3b^2c^3 - 18a^4b^2c^2 - 10a^5b^6c + 3a^2b^3c^2 * (-4ac - b^2)^3)^{1/2} - 4a^3b^3c * (-4ac - b^2)^3)^{1/2} + 2a^3b^3c * (-4ac - b^2)^3)^{1/2} / (2 * (16a^2c^8 + 32a^3c^7 + 16a^4c^6 + b^4c^6 - b^6c^4 - 8a^2b^2c^7 + 10a^3b^4c^5 - 32a^2b^2c^6 + a^2b^4c^4 - 8a^3b^2c^5))^{1/2} + (8192 * (2a^5c^5 - a^4c^6 - 3b^9c + 3a^6c^4 + b^6c^4 - 4b^7c^3 + 6b^8c^2 - 5a^2b^4c^5 + 23a^2b^5c^4 - 38a^2b^6c^3 + 16
\end{aligned}$$

$$\begin{aligned}
& *a*b^7*c^2 + a^2*b^7*c - 5*a^3*b^6*c + 6*a^4*b^5*c + 2*a^4*b^5*c + 10*a^5*b \\
& *c^4 + 8*a^6*b^5*c^3 + 4*a^2*b^2*c^6 - 28*a^2*b^3*c^5 + 57*a^2*b^4*c^4 - 3*a^ \\
& 2*b^5*c^3 - 41*a^2*b^6*c^2 - 3*a^3*b^2*c^5 - 55*a^3*b^3*c^4 + 91*a^3*b^4*c^ \\
& 3 + 4*a^3*b^5*c^2 - 24*a^4*b^2*c^4 - 36*a^4*b^3*c^3 + 25*a^4*b^4*c^2 - 20*a \\
& ^5*b^2*c^3 - 10*a^5*b^3*c^2 + 5*a*b^8*c))/c^4)*((b^8 - a^2*b^6 + 8*a^4*c^4 \\
& + 8*a^5*c^3 + b^5*(-(4*a*c - b^2)^3)^{(1/2)} + 8*a^3*b^4*c - a^2*b^3*(-(4*a*c \\
& - b^2)^3)^{(1/2)} + 33*a^2*b^4*c^2 - 38*a^3*b^2*c^3 - 18*a^4*b^2*c^2 - 10*a* \\
& b^6*c + 3*a^2*b*c^2*(-(4*a*c - b^2)^3)^{(1/2)} - 4*a*b^3*c*(-(4*a*c - b^2)^3) \\
& ^{(1/2)} + 2*a^3*b*c*(-(4*a*c - b^2)^3)^{(1/2)))/(2*(16*a^2*c^8 + 32*a^3*c^7 + \\
& 16*a^4*c^6 + b^4*c^6 - b^6*c^4 - 8*a*b^2*c^7 + 10*a*b^4*c^5 - 32*a^2*b^2*c^ \\
& 6 + a^2*b^4*c^4 - 8*a^3*b^2*c^5)))^{(1/2)} + (8192*\tan(x/2)*(5*a*b^8 + b^8*c \\
& - b^9 - 10*a^2*b^7 + 10*a^3*b^6 - 5*a^4*b^5 + a^5*b^4 + a^6*c^3 + a^7*c^2 - \\
& 6*a*b^6*c^2 - 20*a^2*b^6*c + 40*a^3*b^5*c - 35*a^4*b^4*c + 14*a^5*b^3*c - \\
& a^6*b^2*c - 2*a^6*b^2*c + 9*a^2*b^4*c^3 + 11*a^2*b^5*c^2 - 2*a^3*b^2*c^4 - \\
& 18*a^3*b^3*c^3 + 5*a^3*b^4*c^2 + 10*a^4*b^2*c^3 - 20*a^4*b^3*c^2 + 10*a^5*b \\
& ^2*c^2 + 2*a*b^7*c))/c^4)*((b^8 - a^2*b^6 + 8*a^4*c^4 + 8*a^5*c^3 + b^5*(-( \\
& 4*a*c - b^2)^3)^{(1/2)} + 8*a^3*b^4*c - a^2*b^3*(-(4*a*c - b^2)^3)^{(1/2)} + 33 \\
& *a^2*b^4*c^2 - 38*a^3*b^2*c^3 - 18*a^4*b^2*c^2 - 10*a*b^6*c + 3*a^2*b*c^2*( \\
& -(4*a*c - b^2)^3)^{(1/2)} - 4*a*b^3*c*(-(4*a*c - b^2)^3)^{(1/2)} + 2*a^3*b*c*(- \\
& (4*a*c - b^2)^3)^{(1/2)))/(2*(16*a^2*c^8 + 32*a^3*c^7 + 16*a^4*c^6 + b^4*c^6 \\
& - b^6*c^4 - 8*a*b^2*c^7 + 10*a*b^4*c^5 - 32*a^2*b^2*c^6 + a^2*b^4*c^4 - 8*a \\
& ^3*b^2*c^5)))^{(1/2)}*1i)/((((((8192*(4*a^2*c^10 - 4*a^3*c^9 - 20*a^4*c^8 - 1 \\
& 2*a^5*c^7 + b^4*c^8 - 5*b^5*c^7 + 7*b^6*c^6 - 3*b^7*c^5 - 5*a*b^2*c^9 + 31* \\
& a*b^3*c^8 - 46*a*b^4*c^7 + 15*a*b^5*c^6 + 5*a*b^6*c^5 - 44*a^2*b*c^9 - 64*a \\
& ^3*b*c^8 - 28*a^4*b*c^7 - 8*a^5*b*c^6 + 73*a^2*b^2*c^8 + 4*a^2*b^3*c^7 - 40 \\
& *a^2*b^4*c^6 + a^2*b^5*c^5 + 85*a^3*b^2*c^7 + 3*a^3*b^3*c^6 - 5*a^3*b^4*c^5 \\
& + 23*a^4*b^2*c^6 + 2*a^4*b^3*c^5))/c^4 - (8192*\tan(x/2)*((b^8 - a^2*b^6 + \\
& 8*a^4*c^4 + 8*a^5*c^3 + b^5*(-(4*a*c - b^2)^3)^{(1/2)} + 8*a^3*b^4*c - a^2*b^ \\
& 3*(-(4*a*c - b^2)^3)^{(1/2)} + 33*a^2*b^4*c^2 - 38*a^3*b^2*c^3 - 18*a^4*b^2*c \\
& ^2 - 10*a*b^6*c + 3*a^2*b*c^2*(-(4*a*c - b^2)^3)^{(1/2)} - 4*a*b^3*c*(-(4*a*c \\
& - b^2)^3)^{(1/2)} + 2*a^3*b*c*(-(4*a*c - b^2)^3)^{(1/2)))/(2*(16*a^2*c^8 + 32* \\
& a^3*c^7 + 16*a^4*c^6 + b^4*c^6 - b^6*c^4 - 8*a*b^2*c^7 + 10*a*b^4*c^5 - 32* \\
& a^2*b^2*c^6 + a^2*b^4*c^4 - 8*a^3*b^2*c^5)))^{(1/2)}*(8*a*c^12 - 16*a^2*c^11 \\
& - 32*a^3*c^10 + 16*a^4*c^9 + 24*a^5*c^8 - 2*b^2*c^11 + 6*b^3*c^10 - 8*b^4*c \\
& ^9 + 8*b^5*c^8 - 6*b^6*c^7 + 2*b^7*c^6 + 36*a*b^2*c^10 - 50*a*b^3*c^9 + 46* \\
& a*b^4*c^8 - 14*a*b^5*c^7 - 2*a*b^6*c^6 + 72*a^2*b*c^10 + 88*a^3*b*c^9 - 8*a \\
& ^4*b*c^8 - 80*a^2*b^2*c^9 + 2*a^2*b^3*c^8 + 24*a^2*b^4*c^7 - 2*a^2*b^5*c^6 \\
& - 68*a^3*b^2*c^8 + 10*a^3*b^3*c^7 + 2*a^3*b^4*c^6 - 14*a^4*b^2*c^7 - 24*a*b \\
& *c^11))/c^4)*((b^8 - a^2*b^6 + 8*a^4*c^4 + 8*a^5*c^3 + b^5*(-(4*a*c - b^2)^ \\
& 3)^{(1/2)} + 8*a^3*b^4*c - a^2*b^3*(-(4*a*c - b^2)^3)^{(1/2)} + 33*a^2*b^4*c^2 \\
& - 38*a^3*b^2*c^3 - 18*a^4*b^2*c^2 - 10*a*b^6*c + 3*a^2*b*c^2*(-(4*a*c - b^2 \\
& )^3)^{(1/2)} - 4*a*b^3*c*(-(4*a*c - b^2)^3)^{(1/2)} + 2*a^3*b*c*(-(4*a*c - b^2) \\
& ^3)^{(1/2)))/(2*(16*a^2*c^8 + 32*a^3*c^7 + 16*a^4*c^6 + b^4*c^6 - b^6*c^4 - 8 \\
& *a*b^2*c^7 + 10*a*b^4*c^5 - 32*a^2*b^2*c^6 + a^2*b^4*c^4 - 8*a^3*b^2*c^5))) \\
& ^{(1/2)} + (8192*\tan(x/2)*(2*a^3*c^8 - 2*a^4*c^7 + 6*a^5*c^6 + 10*a^6*c^5 + 2
\end{aligned}$$

$$\begin{aligned}
& *b^4*c^7 - 6*b^5*c^6 + 8*b^6*c^5 - 8*b^7*c^4 + 6*b^8*c^3 - 2*b^9*c^2 - 8*a* \\
& b^2*c^8 + 24*a*b^3*c^7 - 38*a*b^4*c^6 + 56*a*b^5*c^5 - 50*a*b^6*c^4 + 14*a* \\
& b^7*c^3 + 2*a*b^8*c^2 + 18*a^3*b*c^7 + 12*a^4*b*c^6 - 22*a^5*b*c^5 + 23*a^2 \\
& *b^2*c^7 - 99*a^2*b^3*c^6 + 93*a^2*b^4*c^5 + 7*a^2*b^5*c^4 - 24*a^2*b^6*c^3 \\
& + 2*a^2*b^7*c^2 + 37*a^3*b^2*c^6 - 122*a^3*b^3*c^5 + 59*a^3*b^4*c^4 - 10*a \\
& ^3*b^5*c^3 - 2*a^3*b^6*c^2 + 11*a^4*b^2*c^5 + 15*a^4*b^3*c^4 + 14*a^4*b^4*c \\
& ^3 - 27*a^5*b^2*c^4)/c^4)*((b^8 - a^2*b^6 + 8*a^4*c^4 + 8*a^5*c^3 + b^5*(- \\
& (4*a*c - b^2)^3)^{(1/2)} + 8*a^3*b^4*c - a^2*b^3*(-(4*a*c - b^2)^3)^{(1/2)} + 3 \\
& 3*a^2*b^4*c^2 - 38*a^3*b^2*c^3 - 18*a^4*b^2*c^2 - 10*a*b^6*c + 3*a^2*b*c^2* \\
& (- (4*a*c - b^2)^3)^{(1/2)} - 4*a*b^3*c*(-(4*a*c - b^2)^3)^{(1/2)} + 2*a^3*b*c*( \\
& - (4*a*c - b^2)^3)^{(1/2)})/(2*(16*a^2*c^8 + 32*a^3*c^7 + 16*a^4*c^6 + b^4*c^6 \\
& - b^6*c^4 - 8*a*b^2*c^7 + 10*a*b^4*c^5 - 32*a^2*b^2*c^6 + a^2*b^4*c^4 - 8* \\
& a^3*b^2*c^5)))^{(1/2)} + (8192*(2*a^5*c^5 - a^4*c^6 - 3*b^9*c + 3*a^6*c^4 + b \\
& ^6*c^4 - 4*b^7*c^3 + 6*b^8*c^2 - 5*a*b^4*c^5 + 23*a*b^5*c^4 - 38*a*b^6*c^3 \\
& + 16*a*b^7*c^2 + a^2*b^7*c - 5*a^3*b^6*c + 6*a^4*b*c^5 + 2*a^4*b^5*c + 10*a \\
& ^5*b*c^4 + 8*a^6*b*c^3 + 4*a^2*b^2*c^6 - 28*a^2*b^3*c^5 + 57*a^2*b^4*c^4 - \\
& 3*a^2*b^5*c^3 - 41*a^2*b^6*c^2 - 3*a^3*b^2*c^5 - 55*a^3*b^3*c^4 + 91*a^3*b^ \\
& 4*c^3 + 4*a^3*b^5*c^2 - 24*a^4*b^2*c^4 - 36*a^4*b^3*c^3 + 25*a^4*b^4*c^2 - \\
& 20*a^5*b^2*c^3 - 10*a^5*b^3*c^2 + 5*a*b^8*c))/c^4)*((b^8 - a^2*b^6 + 8*a^4* \\
& c^4 + 8*a^5*c^3 + b^5*(-(4*a*c - b^2)^3)^{(1/2)} + 8*a^3*b^4*c - a^2*b^3*(-(4 \\
& *a*c - b^2)^3)^{(1/2)} + 33*a^2*b^4*c^2 - 38*a^3*b^2*c^3 - 18*a^4*b^2*c^2 - 1 \\
& 0*a*b^6*c + 3*a^2*b*c^2*(-(4*a*c - b^2)^3)^{(1/2)} - 4*a*b^3*c*(-(4*a*c - b^2 \\
& )^3)^{(1/2)} + 2*a^3*b*c*(-(4*a*c - b^2)^3)^{(1/2)})/(2*(16*a^2*c^8 + 32*a^3*c^ \\
& 7 + 16*a^4*c^6 + b^4*c^6 - b^6*c^4 - 8*a*b^2*c^7 + 10*a*b^4*c^5 - 32*a^2*b^ \\
& 2*c^6 + a^2*b^4*c^4 - 8*a^3*b^2*c^5)))^{(1/2)} - (8192*\tan(x/2)*(5*a*b^8 + b^ \\
& 8*c - b^9 - 10*a^2*b^7 + 10*a^3*b^6 - 5*a^4*b^5 + a^5*b^4 + a^6*c^3 + a^7*c \\
& ^2 - 6*a*b^6*c^2 - 20*a^2*b^6*c + 40*a^3*b^5*c - 35*a^4*b^4*c + 14*a^5*b^3* \\
& c - a^6*b*c^2 - 2*a^6*b^2*c + 9*a^2*b^4*c^3 + 11*a^2*b^5*c^2 - 2*a^3*b^2*c^ \\
& 4 - 18*a^3*b^3*c^3 + 5*a^3*b^4*c^2 + 10*a^4*b^2*c^3 - 20*a^4*b^3*c^2 + 10*a \\
& ^5*b^2*c^2 + 2*a*b^7*c))/c^4)*((b^8 - a^2*b^6 + 8*a^4*c^4 + 8*a^5*c^3 + b^5 \\
& *(- (4*a*c - b^2)^3)^{(1/2)} + 8*a^3*b^4*c - a^2*b^3*(-(4*a*c - b^2)^3)^{(1/2)} \\
& + 33*a^2*b^4*c^2 - 38*a^3*b^2*c^3 - 18*a^4*b^2*c^2 - 10*a*b^6*c + 3*a^2*b*c \\
& ^2*(-(4*a*c - b^2)^3)^{(1/2)} - 4*a*b^3*c*(-(4*a*c - b^2)^3)^{(1/2)} + 2*a^3*b* \\
& c*(-(4*a*c - b^2)^3)^{(1/2)})/(2*(16*a^2*c^8 + 32*a^3*c^7 + 16*a^4*c^6 + b^4* \\
& c^6 - b^6*c^4 - 8*a*b^2*c^7 + 10*a*b^4*c^5 - 32*a^2*b^2*c^6 + a^2*b^4*c^4 - \\
& 8*a^3*b^2*c^5)))^{(1/2)} + (((((8192*(4*a^2*c^10 - 4*a^3*c^9 - 20*a^4*c^8 - \\
& 12*a^5*c^7 + b^4*c^8 - 5*b^5*c^7 + 7*b^6*c^6 - 3*b^7*c^5 - 5*a*b^2*c^9 + 31 \\
& *a*b^3*c^8 - 46*a*b^4*c^7 + 15*a*b^5*c^6 + 5*a*b^6*c^5 - 44*a^2*b*c^9 - 64* \\
& a^3*b*c^8 - 28*a^4*b*c^7 - 8*a^5*b*c^6 + 73*a^2*b^2*c^8 + 4*a^2*b^3*c^7 - 4 \\
& 0*a^2*b^4*c^6 + a^2*b^5*c^5 + 85*a^3*b^2*c^7 + 3*a^3*b^3*c^6 - 5*a^3*b^4*c^ \\
& 5 + 23*a^4*b^2*c^6 + 2*a^4*b^3*c^5))/c^4 + (8192*\tan(x/2)*((b^8 - a^2*b^6 + \\
& 8*a^4*c^4 + 8*a^5*c^3 + b^5*(-(4*a*c - b^2)^3)^{(1/2)} + 8*a^3*b^4*c - a^2*b \\
& ^3*(-(4*a*c - b^2)^3)^{(1/2)} + 33*a^2*b^4*c^2 - 38*a^3*b^2*c^3 - 18*a^4*b^2* \\
& c^2 - 10*a*b^6*c + 3*a^2*b*c^2*(-(4*a*c - b^2)^3)^{(1/2)} - 4*a*b^3*c*(-(4*a* \\
& c - b^2)^3)^{(1/2)} + 2*a^3*b*c*(-(4*a*c - b^2)^3)^{(1/2)})/(2*(16*a^2*c^8 + 32
\end{aligned}$$

$$\begin{aligned}
& a^3c^7 + 16a^4c^6 + b^4c^6 - b^6c^4 - 8a^2b^2c^7 + 10a^2b^4c^5 - 32 \\
& a^2b^2c^6 + a^2b^4c^4 - 8a^3b^2c^5))^{(1/2)}(8a^2c^{12} - 16a^2c^{11} \\
& - 32a^3c^{10} + 16a^4c^9 + 24a^5c^8 - 2b^2c^{11} + 6b^3c^{10} - 8b^4c^9 \\
& + 8b^5c^8 - 6b^6c^7 + 2b^7c^6 + 36a^2b^2c^{10} - 50a^2b^3c^9 + 46 \\
& a^2b^4c^8 - 14a^2b^5c^7 - 2a^2b^6c^6 + 72a^2b^2c^{10} + 88a^3b^2c^9 - 8 \\
& a^4b^2c^8 - 80a^2b^2c^9 + 2a^2b^3c^8 + 24a^2b^4c^7 - 2a^2b^5c^6 \\
& - 68a^3b^2c^8 + 10a^3b^3c^7 + 2a^3b^4c^6 - 14a^4b^2c^7 - 24a^2 \\
& b^2c^{11})/c^4)((b^8 - a^2b^6 + 8a^4c^4 + 8a^5c^3 + b^5(-(4a^2c - b^2) \\
& ^3)^{(1/2)} + 8a^3b^4c - a^2b^3(-(4a^2c - b^2)^3)^{(1/2)} + 33a^2b^4c^2 \\
& - 38a^3b^2c^3 - 18a^4b^2c^2 - 10a^2b^6c + 3a^2b^2c^2(-(4a^2c - b^2) \\
& ^3)^{(1/2)} - 4a^2b^3c(-(4a^2c - b^2)^3)^{(1/2)} + 2a^3b^2c(-(4a^2c - b^2) \\
& ^3)^{(1/2)})/(2*(16a^2c^8 + 32a^3c^7 + 16a^4c^6 + b^4c^6 - b^6c^4 - \\
& 8a^2b^2c^7 + 10a^2b^4c^5 - 32a^2b^2c^6 + a^2b^4c^4 - 8a^3b^2c^5)) \\
& )^{(1/2)} - (8192*\tan(x/2)*(2a^3c^8 - 2a^4c^7 + 6a^5c^6 + 10a^6c^5 + \\
& 2b^4c^7 - 6b^5c^6 + 8b^6c^5 - 8b^7c^4 + 6b^8c^3 - 2b^9c^2 - 8a \\
& ^2b^2c^8 + 24a^2b^3c^7 - 38a^2b^4c^6 + 56a^2b^5c^5 - 50a^2b^6c^4 + 14a \\
& ^2b^7c^3 + 2a^2b^8c^2 + 18a^3b^2c^7 + 12a^4b^2c^6 - 22a^5b^2c^5 + 23a^2 \\
& b^2c^7 - 99a^2b^3c^6 + 93a^2b^4c^5 + 7a^2b^5c^4 - 24a^2b^6c^3 \\
& + 2a^2b^7c^2 + 37a^3b^2c^6 - 122a^3b^3c^5 + 59a^3b^4c^4 - 10 \\
& a^3b^5c^3 - 2a^3b^6c^2 + 11a^4b^2c^5 + 15a^4b^3c^4 + 14a^4b^4c^3 \\
& - 27a^5b^2c^4))/c^4)((b^8 - a^2b^6 + 8a^4c^4 + 8a^5c^3 + b^5(- \\
& (4a^2c - b^2)^3)^{(1/2)} + 8a^3b^4c - a^2b^3(-(4a^2c - b^2)^3)^{(1/2)} + \\
& 33a^2b^4c^2 - 38a^3b^2c^3 - 18a^4b^2c^2 - 10a^2b^6c + 3a^2b^2c^2 \\
& *(-(4a^2c - b^2)^3)^{(1/2)} - 4a^2b^3c(-(4a^2c - b^2)^3)^{(1/2)} + 2a^3b^2c \\
& *(-(4a^2c - b^2)^3)^{(1/2)})/(2*(16a^2c^8 + 32a^3c^7 + 16a^4c^6 + b^4c^6 \\
& - b^6c^4 - 8a^2b^2c^7 + 10a^2b^4c^5 - 32a^2b^2c^6 + a^2b^4c^4 - 8 \\
& a^3b^2c^5))^{(1/2)} + (8192*(2a^5c^5 - a^4c^6 - 3b^9c + 3a^6c^4 + \\
& b^6c^4 - 4b^7c^3 + 6b^8c^2 - 5a^2b^4c^5 + 23a^2b^5c^4 - 38a^2b^6c^3 \\
& + 16a^2b^7c^2 + a^2b^7c - 5a^3b^6c + 6a^4b^2c^5 + 2a^4b^5c + 10 \\
& a^5b^2c^4 + 8a^6b^2c^3 + 4a^2b^2c^6 - 28a^2b^3c^5 + 57a^2b^4c^4 - \\
& 3a^2b^5c^3 - 41a^2b^6c^2 - 3a^3b^2c^5 - 55a^3b^3c^4 + 91a^3b^4 \\
& c^3 + 4a^3b^5c^2 - 24a^4b^2c^4 - 36a^4b^3c^3 + 25a^4b^4c^2 - \\
& 20a^5b^2c^3 - 10a^5b^3c^2 + 5a^2b^8c))/c^4)((b^8 - a^2b^6 + 8a^4 \\
& c^4 + 8a^5c^3 + b^5(-(4a^2c - b^2)^3)^{(1/2)} + 8a^3b^4c - a^2b^3(- \\
& (4a^2c - b^2)^3)^{(1/2)} + 33a^2b^4c^2 - 38a^3b^2c^3 - 18a^4b^2c^2 - \\
& 10a^2b^6c + 3a^2b^2c^2(-(4a^2c - b^2)^3)^{(1/2)} - 4a^2b^3c(-(4a^2c - b^2) \\
& ^3)^{(1/2)} + 2a^3b^2c(-(4a^2c - b^2)^3)^{(1/2)})/(2*(16a^2c^8 + 32a^3c \\
& ^7 + 16a^4c^6 + b^4c^6 - b^6c^4 - 8a^2b^2c^7 + 10a^2b^4c^5 - 32a^2b^2 \\
& c^6 + a^2b^4c^4 - 8a^3b^2c^5))^{(1/2)} + (8192*\tan(x/2)*(5a^2b^8 + b \\
& ^8c - b^9 - 10a^2b^7 + 10a^3b^6 - 5a^4b^5 + a^5b^4 + a^6c^3 + a^7c \\
& ^2 - 6a^2b^6c^2 - 20a^2b^6c + 40a^3b^5c - 35a^4b^4c + 14a^5b^3 \\
& c - a^6b^2c^2 - 2a^6b^2c + 9a^2b^4c^3 + 11a^2b^5c^2 - 2a^3b^2c^4 \\
& - 18a^3b^3c^3 + 5a^3b^4c^2 + 10a^4b^2c^3 - 20a^4b^3c^2 + 10 \\
& a^5b^2c^2 + 2a^2b^7c))/c^4)((b^8 - a^2b^6 + 8a^4c^4 + 8a^5c^3 + b^5 \\
& *(-(4a^2c - b^2)^3)^{(1/2)} + 8a^3b^4c - a^2b^3(-(4a^2c - b^2)^3)^{(1/2)}
\end{aligned}$$

$$\begin{aligned}
& + 33a^2b^4c^2 - 38a^3b^2c^3 - 18a^4b^2c^2 - 10ab^6c + 3a^2b^8c^2 \\
& \cdot (-4ac - b^2)^3)^{1/2} - 4ab^3c \cdot (-4ac - b^2)^3)^{1/2} + 2a^3b^5c \\
& \cdot (-4ac - b^2)^3)^{1/2} / (2(16a^2c^8 + 32a^3c^7 + 16a^4c^6 + b^4c^6 - b^6c^4 - 8ab^2c^7 \\
& + 10ab^4c^5 - 32a^2b^2c^6 + a^2b^4c^4 - 8a^3b^2c^5)))^{1/2} - (16384(a^7b + a^3b^5 - 4a^4b^4 + 6a^5b^3 \\
& - 4a^6b^2 - a^3b^4c + 2a^4b^3c - 2a^5b^2c + a^4b^2c^2 + a^6b^2c \\
& ))/c^4)) \cdot ((b^8 - a^2b^6 + 8a^4c^4 + 8a^5c^3 + b^5(-4ac - b^2)^3)^{1/2} \\
& + 8a^3b^4c - a^2b^3(-4ac - b^2)^3)^{1/2} + 33a^2b^4c^2 - 38a^3b^2c^3 - 18a^4b^2c^2 \\
& - 10ab^6c + 3a^2b^8c^2 \cdot (-4ac - b^2)^3)^{1/2} - 4ab^3c \cdot (-4ac - b^2)^3)^{1/2} \\
& + 2a^3b^5c \cdot (-4ac - b^2)^3)^{1/2} / (2(16a^2c^8 + 32a^3c^7 + 16a^4c^6 + b^4c^6 - b^6c^4 - 8ab^2c^7 \\
& + 10ab^4c^5 - 32a^2b^2c^6 + a^2b^4c^4 - 8a^3b^2c^5)))^{1/2} * 2i - \operatorname{atan}(\frac{8192(4a^2c^{10} - 4a^3c^9 - 20a^4c^8 - 12a^5c^7 + b^4c^8 - 5b^5c^7 + 7b^6c^6 - 3b^7c^5 - 5ab^2c^9 + 31ab^3c^8 - 46ab^4c^7 + 15ab^5c^6 + 5ab^6c^5 - 44a^2b^2c^9 - 64a^3b^2c^8 - 28a^4b^2c^7 - 8a^5b^2c^6 + 73a^2b^2c^8 + 4a^2b^3c^7 - 40a^2b^4c^6 + a^2b^5c^5 + 85a^3b^2c^7 + 3a^3b^3c^6 - 5a^3b^4c^5 + 23a^4b^2c^6 + 2a^4b^3c^5)}{c^4} - (8192 \tan(x/2) \cdot ((b^8 - a^2b^6 + 8a^4c^4 + 8a^5c^3 - b^5(-4ac - b^2)^3)^{1/2} + 8a^3b^4c + a^2b^3(-4ac - b^2)^3)^{1/2} + 33a^2b^4c^2 - 38a^3b^2c^3 - 18a^4b^2c^2 - 10ab^6c - 3a^2b^8c^2 \cdot (-4ac - b^2)^3)^{1/2} + 4ab^3c \cdot (-4ac - b^2)^3)^{1/2} - 2a^3b^5c \cdot (-4ac - b^2)^3)^{1/2} / (2(16a^2c^8 + 32a^3c^7 + 16a^4c^6 + b^4c^6 - b^6c^4 - 8ab^2c^7 + 10ab^4c^5 - 32a^2b^2c^6 + a^2b^4c^4 - 8a^3b^2c^5)))^{1/2} \cdot (8a^2c^{12} - 16a^2c^{11} - 32a^3c^{10} + 16a^4c^9 + 24a^5c^8 - 2b^2c^{11} + 6b^3c^{10} - 8b^4c^9 + 8b^5c^8 - 6b^6c^7 + 2b^7c^6 + 36ab^2c^{10} - 50ab^3c^9 + 46ab^4c^8 - 14ab^5c^7 - 2ab^6c^6 + 72a^2b^2c^{10} + 88a^3b^2c^9 - 8a^4b^2c^8 - 80a^2b^2c^9 + 2a^2b^3c^8 + 24a^2b^4c^7 - 2a^2b^5c^6 - 68a^3b^2c^8 + 10a^3b^3c^7 + 2a^3b^4c^6 - 14a^4b^2c^7 - 24ab^2c^{11})) / c^4) \cdot ((b^8 - a^2b^6 + 8a^4c^4 + 8a^5c^3 - b^5(-4ac - b^2)^3)^{1/2} + 8a^3b^4c + a^2b^3(-4ac - b^2)^3)^{1/2} + 33a^2b^4c^2 - 38a^3b^2c^3 - 18a^4b^2c^2 - 10ab^6c - 3a^2b^8c^2 \cdot (-4ac - b^2)^3)^{1/2} + 4ab^3c \cdot (-4ac - b^2)^3)^{1/2} - 2a^3b^5c \cdot (-4ac - b^2)^3)^{1/2} / (2(16a^2c^8 + 32a^3c^7 + 16a^4c^6 + b^4c^6 - b^6c^4 - 8ab^2c^7 + 10ab^4c^5 - 32a^2b^2c^6 + a^2b^4c^4 - 8a^3b^2c^5)))^{1/2} + (8192 \tan(x/2) \cdot (2a^3c^8 - 2a^4c^7 + 6a^5c^6 + 10a^6c^5 + 2b^4c^7 - 6b^5c^6 + 8b^6c^5 - 8b^7c^4 + 6b^8c^3 - 2b^9c^2 - 8ab^2c^8 + 24ab^3c^7 - 38ab^4c^6 + 56ab^5c^5 - 50ab^6c^4 + 14ab^7c^3 + 2ab^8c^2 + 18a^3b^2c^7 + 12a^4b^2c^6 - 22a^5b^2c^5 + 23a^2b^2c^7 - 99a^2b^3c^6 + 93a^2b^4c^5 + 7a^2b^5c^4 - 24a^2b^6c^3 + 2a^2b^7c^2 + 37a^3b^2c^6 - 122a^3b^3c^5 + 59a^3b^4c^4 - 10a^3b^5c^3 - 2a^3b^6c^2 + 11a^4b^2c^5 + 15a^4b^3c^4 + 14a^4b^4c^3 - 27a^5b^2c^4)) / c^4) \cdot ((b^8 - a^2b^6 + 8a^4c^4 + 8a^5c^3 - b^5(-4ac - b^2)^3)^{1/2} + 8a^3b^4c + a^2b^3(-4ac - b^2)^3)^{1/2} + 33a^2b^4c^2 - 38a^3b^2c^3 - 18a^4b^2c^2 - 10ab^6c - 3a^2b^8c^2 \cdot (-4ac -
\end{aligned}$$

$$\begin{aligned}
& b^2)^3)^{(1/2)} + 4*a*b^3*c*(-(4*a*c - b^2)^3)^{(1/2)} - 2*a^3*b*c*(-(4*a*c - b \\
& ^2)^3)^{(1/2)})/(2*(16*a^2*c^8 + 32*a^3*c^7 + 16*a^4*c^6 + b^4*c^6 - b^6*c^4 \\
& - 8*a*b^2*c^7 + 10*a*b^4*c^5 - 32*a^2*b^2*c^6 + a^2*b^4*c^4 - 8*a^3*b^2*c^5 \\
& )))^{(1/2)} + (8192*(2*a^5*c^5 - a^4*c^6 - 3*b^9*c + 3*a^6*c^4 + b^6*c^4 - 4* \\
& b^7*c^3 + 6*b^8*c^2 - 5*a*b^4*c^5 + 23*a*b^5*c^4 - 38*a*b^6*c^3 + 16*a*b^7* \\
& c^2 + a^2*b^7*c - 5*a^3*b^6*c + 6*a^4*b^5*c + 2*a^4*b^5*c + 10*a^5*b^4*c + \\
& 8*a^6*b^3*c + 4*a^2*b^2*c^6 - 28*a^2*b^3*c^5 + 57*a^2*b^4*c^4 - 3*a^2*b^5*c \\
& ^3 - 41*a^2*b^6*c^2 - 3*a^3*b^2*c^5 - 55*a^3*b^3*c^4 + 91*a^3*b^4*c^3 + 4*a \\
& ^3*b^5*c^2 - 24*a^4*b^2*c^4 - 36*a^4*b^3*c^3 + 25*a^4*b^4*c^2 - 20*a^5*b^2* \\
& c^3 - 10*a^5*b^3*c^2 + 5*a*b^8*c))/c^4)*((b^8 - a^2*b^6 + 8*a^4*c^4 + 8*a^5 \\
& *c^3 - b^5*(-(4*a*c - b^2)^3)^{(1/2)} + 8*a^3*b^4*c + a^2*b^3*(-(4*a*c - b^2) \\
& ^3)^{(1/2)} + 33*a^2*b^4*c^2 - 38*a^3*b^2*c^3 - 18*a^4*b^2*c^2 - 10*a*b^6*c - \\
& 3*a^2*b*c^2*(-(4*a*c - b^2)^3)^{(1/2)} + 4*a*b^3*c*(-(4*a*c - b^2)^3)^{(1/2)} \\
& - 2*a^3*b*c*(-(4*a*c - b^2)^3)^{(1/2)})/(2*(16*a^2*c^8 + 32*a^3*c^7 + 16*a^4* \\
& c^6 + b^4*c^6 - b^6*c^4 - 8*a*b^2*c^7 + 10*a*b^4*c^5 - 32*a^2*b^2*c^6 + a^2 \\
& *b^4*c^4 - 8*a^3*b^2*c^5)))^{(1/2)} - (8192*\tan(x/2)*(5*a*b^8 + b^8*c - b^9 - \\
& 10*a^2*b^7 + 10*a^3*b^6 - 5*a^4*b^5 + a^5*b^4 + a^6*c^3 + a^7*c^2 - 6*a*b^6 \\
& *c^2 - 20*a^2*b^6*c + 40*a^3*b^5*c - 35*a^4*b^4*c + 14*a^5*b^3*c - a^6*b*c \\
& ^2 - 2*a^6*b^2*c + 9*a^2*b^4*c^3 + 11*a^2*b^5*c^2 - 2*a^3*b^2*c^4 - 18*a^3* \\
& b^3*c^3 + 5*a^3*b^4*c^2 + 10*a^4*b^2*c^3 - 20*a^4*b^3*c^2 + 10*a^5*b^2*c^2 \\
& + 2*a*b^7*c))/c^4)*((b^8 - a^2*b^6 + 8*a^4*c^4 + 8*a^5*c^3 - b^5*(-(4*a*c - \\
& b^2)^3)^{(1/2)} + 8*a^3*b^4*c + a^2*b^3*(-(4*a*c - b^2)^3)^{(1/2)} + 33*a^2*b^ \\
& 4*c^2 - 38*a^3*b^2*c^3 - 18*a^4*b^2*c^2 - 10*a*b^6*c - 3*a^2*b*c^2*(-(4*a*c \\
& - b^2)^3)^{(1/2)} + 4*a*b^3*c*(-(4*a*c - b^2)^3)^{(1/2)} - 2*a^3*b*c*(-(4*a*c \\
& - b^2)^3)^{(1/2)})/(2*(16*a^2*c^8 + 32*a^3*c^7 + 16*a^4*c^6 + b^4*c^6 - b^6*c \\
& ^4 - 8*a*b^2*c^7 + 10*a*b^4*c^5 - 32*a^2*b^2*c^6 + a^2*b^4*c^4 - 8*a^3*b^2* \\
& c^5)))^{(1/2)}*ii - (((((8192*(4*a^2*c^10 - 4*a^3*c^9 - 20*a^4*c^8 - 12*a^5*c \\
& ^7 + b^4*c^8 - 5*b^5*c^7 + 7*b^6*c^6 - 3*b^7*c^5 - 5*a*b^2*c^9 + 31*a*b^3*c \\
& ^8 - 46*a*b^4*c^7 + 15*a*b^5*c^6 + 5*a*b^6*c^5 - 44*a^2*b*c^9 - 64*a^3*b*c^ \\
& 8 - 28*a^4*b*c^7 - 8*a^5*b*c^6 + 73*a^2*b^2*c^8 + 4*a^2*b^3*c^7 - 40*a^2*b^ \\
& 4*c^6 + a^2*b^5*c^5 + 85*a^3*b^2*c^7 + 3*a^3*b^3*c^6 - 5*a^3*b^4*c^5 + 23*a \\
& ^4*b^2*c^6 + 2*a^4*b^3*c^5))/c^4 + (8192*\tan(x/2)*((b^8 - a^2*b^6 + 8*a^4*c \\
& ^4 + 8*a^5*c^3 - b^5*(-(4*a*c - b^2)^3)^{(1/2)} + 8*a^3*b^4*c + a^2*b^3*(-(4* \\
& a*c - b^2)^3)^{(1/2)} + 33*a^2*b^4*c^2 - 38*a^3*b^2*c^3 - 18*a^4*b^2*c^2 - 10 \\
& *a*b^6*c - 3*a^2*b*c^2*(-(4*a*c - b^2)^3)^{(1/2)} + 4*a*b^3*c*(-(4*a*c - b^2) \\
& ^3)^{(1/2)} - 2*a^3*b*c*(-(4*a*c - b^2)^3)^{(1/2)})/(2*(16*a^2*c^8 + 32*a^3*c^7 \\
& + 16*a^4*c^6 + b^4*c^6 - b^6*c^4 - 8*a*b^2*c^7 + 10*a*b^4*c^5 - 32*a^2*b^2 \\
& *c^6 + a^2*b^4*c^4 - 8*a^3*b^2*c^5)))^{(1/2)}*(8*a*c^12 - 16*a^2*c^11 - 32*a^ \\
& 3*c^10 + 16*a^4*c^9 + 24*a^5*c^8 - 2*b^2*c^11 + 6*b^3*c^10 - 8*b^4*c^9 + 8* \\
& b^5*c^8 - 6*b^6*c^7 + 2*b^7*c^6 + 36*a*b^2*c^10 - 50*a*b^3*c^9 + 46*a*b^4*c \\
& ^8 - 14*a*b^5*c^7 - 2*a*b^6*c^6 + 72*a^2*b*c^10 + 88*a^3*b*c^9 - 8*a^4*b*c^ \\
& 8 - 80*a^2*b^2*c^9 + 2*a^2*b^3*c^8 + 24*a^2*b^4*c^7 - 2*a^2*b^5*c^6 - 68*a^ \\
& 3*b^2*c^8 + 10*a^3*b^3*c^7 + 2*a^3*b^4*c^6 - 14*a^4*b^2*c^7 - 24*a*b*c^11)) \\
& /c^4)*((b^8 - a^2*b^6 + 8*a^4*c^4 + 8*a^5*c^3 - b^5*(-(4*a*c - b^2)^3)^{(1/2)} \\
& ) + 8*a^3*b^4*c + a^2*b^3*(-(4*a*c - b^2)^3)^{(1/2)} + 33*a^2*b^4*c^2 - 38*a^
\end{aligned}$$

$$\begin{aligned}
& 3*b^2*c^3 - 18*a^4*b^2*c^2 - 10*a*b^6*c - 3*a^2*b*c^2*(-(4*a*c - b^2)^3)^{(1/2)} + 4*a*b^3*c*(-(4*a*c - b^2)^3)^{(1/2)} - 2*a^3*b*c*(-(4*a*c - b^2)^3)^{(1/2)})/(2*(16*a^2*c^8 + 32*a^3*c^7 + 16*a^4*c^6 + b^4*c^6 - b^6*c^4 - 8*a*b^2*c^7 + 10*a*b^4*c^5 - 32*a^2*b^2*c^6 + a^2*b^4*c^4 - 8*a^3*b^2*c^5)))^{(1/2)} \\
& - (8192*\tan(x/2)*(2*a^3*c^8 - 2*a^4*c^7 + 6*a^5*c^6 + 10*a^6*c^5 + 2*b^4*c^7 - 6*b^5*c^6 + 8*b^6*c^5 - 8*b^7*c^4 + 6*b^8*c^3 - 2*b^9*c^2 - 8*a*b^2*c^8 + 24*a*b^3*c^7 - 38*a*b^4*c^6 + 56*a*b^5*c^5 - 50*a*b^6*c^4 + 14*a*b^7*c^3 + 2*a*b^8*c^2 + 18*a^3*b*c^7 + 12*a^4*b*c^6 - 22*a^5*b*c^5 + 23*a^2*b^2*c^7 - 99*a^2*b^3*c^6 + 93*a^2*b^4*c^5 + 7*a^2*b^5*c^4 - 24*a^2*b^6*c^3 + 2*a^2*b^7*c^2 + 37*a^3*b^2*c^6 - 122*a^3*b^3*c^5 + 59*a^3*b^4*c^4 - 10*a^3*b^5*c^3 - 2*a^3*b^6*c^2 + 11*a^4*b^2*c^5 + 15*a^4*b^3*c^4 + 14*a^4*b^4*c^3 - 27*a^5*b^2*c^4))/c^4)*((b^8 - a^2*b^6 + 8*a^4*c^4 + 8*a^5*c^3 - b^5*(-(4*a*c - b^2)^3)^{(1/2)} + 8*a^3*b^4*c + a^2*b^3*(-(4*a*c - b^2)^3)^{(1/2)} + 33*a^2*b^4*c^2 - 38*a^3*b^2*c^3 - 18*a^4*b^2*c^2 - 10*a*b^6*c - 3*a^2*b*c^2*(-(4*a*c - b^2)^3)^{(1/2)} + 4*a*b^3*c*(-(4*a*c - b^2)^3)^{(1/2)} - 2*a^3*b*c*(-(4*a*c - b^2)^3)^{(1/2)}))/2*(16*a^2*c^8 + 32*a^3*c^7 + 16*a^4*c^6 + b^4*c^6 - b^6*c^4 - 8*a*b^2*c^7 + 10*a*b^4*c^5 - 32*a^2*b^2*c^6 + a^2*b^4*c^4 - 8*a^3*b^2*c^5)))^{(1/2)} + (8192*(2*a^5*c^5 - a^4*c^6 - 3*b^9*c + 3*a^6*c^4 + b^6*c^4 - 4*b^7*c^3 + 6*b^8*c^2 - 5*a*b^4*c^5 + 23*a*b^5*c^4 - 38*a*b^6*c^3 + 16*a*b^7*c^2 + a^2*b^7*c - 5*a^3*b^6*c + 6*a^4*b^5*c + 2*a^4*b^5*c + 10*a^5*b^4*c + 8*a^6*b^3*c + 4*a^2*b^2*c^6 - 28*a^2*b^3*c^5 + 57*a^2*b^4*c^4 - 3*a^2*b^5*c^3 - 41*a^2*b^6*c^2 - 3*a^3*b^2*c^5 - 55*a^3*b^3*c^4 + 91*a^3*b^4*c^3 + 4*a^3*b^5*c^2 - 24*a^4*b^2*c^4 - 36*a^4*b^3*c^3 + 25*a^4*b^4*c^2 - 20*a^5*b^2*c^3 - 10*a^5*b^3*c^2 + 5*a*b^8*c))/c^4)*((b^8 - a^2*b^6 + 8*a^4*c^4 + 8*a^5*c^3 - b^5*(-(4*a*c - b^2)^3)^{(1/2)} + 8*a^3*b^4*c + a^2*b^3*(-(4*a*c - b^2)^3)^{(1/2)} + 33*a^2*b^4*c^2 - 38*a^3*b^2*c^3 - 18*a^4*b^2*c^2 - 10*a*b^6*c - 3*a^2*b*c^2*(-(4*a*c - b^2)^3)^{(1/2)} + 4*a*b^3*c*(-(4*a*c - b^2)^3)^{(1/2)} - 2*a^3*b*c*(-(4*a*c - b^2)^3)^{(1/2)}))/2*(16*a^2*c^8 + 32*a^3*c^7 + 16*a^4*c^6 + b^4*c^6 - b^6*c^4 - 8*a*b^2*c^7 + 10*a*b^4*c^5 - 32*a^2*b^2*c^6 + a^2*b^4*c^4 - 8*a^3*b^2*c^5)))^{(1/2)} + (8192*\tan(x/2)*(5*a*b^8 + b^8*c - b^9 - 10*a^2*b^7 + 10*a^3*b^6 - 5*a^4*b^5 + a^5*b^4 + a^6*c^3 + a^7*c^2 - 6*a*b^6*c^2 - 20*a^2*b^6*c + 40*a^3*b^5*c - 35*a^4*b^4*c + 14*a^5*b^3*c - a^6*b*c^2 - 2*a^6*b^2*c + 9*a^2*b^4*c^3 + 11*a^2*b^5*c^2 - 2*a^3*b^2*c^4 - 18*a^3*b^3*c^3 + 5*a^3*b^4*c^2 + 10*a^4*b^2*c^3 - 20*a^4*b^3*c^2 + 10*a^5*b^2*c^2 + 2*a*b^7*c))/c^4)*((b^8 - a^2*b^6 + 8*a^4*c^4 + 8*a^5*c^3 - b^5*(-(4*a*c - b^2)^3)^{(1/2)} + 8*a^3*b^4*c + a^2*b^3*(-(4*a*c - b^2)^3)^{(1/2)} + 33*a^2*b^4*c^2 - 38*a^3*b^2*c^3 - 18*a^4*b^2*c^2 - 10*a*b^6*c - 3*a^2*b*c^2*(-(4*a*c - b^2)^3)^{(1/2)} + 4*a*b^3*c*(-(4*a*c - b^2)^3)^{(1/2)} - 2*a^3*b*c*(-(4*a*c - b^2)^3)^{(1/2)}))/2*(16*a^2*c^8 + 32*a^3*c^7 + 16*a^4*c^6 + b^4*c^6 - b^6*c^4 - 8*a*b^2*c^7 + 10*a*b^4*c^5 - 32*a^2*b^2*c^6 + a^2*b^4*c^4 - 8*a^3*b^2*c^5)))^{(1/2)}*i)/((((8192*(4*a^2*c^10 - 4*a^3*c^9 - 20*a^4*c^8 - 12*a^5*c^7 + b^4*c^8 - 5*b^5*c^7 + 7*b^6*c^6 - 3*b^7*c^5 - 5*a*b^2*c^9 + 31*a*b^3*c^8 - 46*a*b^4*c^7 + 15*a*b^5*c^6 + 5*a*b^6*c^5 - 44*a^2*b*c^9 - 64*a^3*b*c^8 - 28*a^4*b*c^7 - 8*a^5*b*c^6 + 73*a^2*b^2*c^8 + 4*a^2*b^3*c^7 - 40*a^2*b^4*c^6 + a^2*b^5*c^5 + 85*a^3*b^2*c^7 + 3*a^3*b^3*c^6 - 5*a^3*b^4*c^5 +
\end{aligned}$$



$$\begin{aligned}
& 23a^4b^2c^6 + 2a^4b^3c^5)/c^4 - (8192\tan(x/2)*((b^8 - a^2b^6 + 8a^4c^4 + 8a^5c^3 - b^5*(-(4ac - b^2)^3)^{1/2} + 8a^3b^4c + a^2b^3*(-(4ac - b^2)^3)^{1/2} + 33a^2b^4c^2 - 38a^3b^2c^3 - 18a^4b^2c^2 - 10ab^6c - 3a^2b^2c^2*(-(4ac - b^2)^3)^{1/2} + 4ab^3c*(-(4ac - b^2)^3)^{1/2} - 2a^3b^2c*(-(4ac - b^2)^3)^{1/2}))/((2*(16a^2c^8 + 32a^3c^7 + 16a^4c^6 + b^4c^6 - b^6c^4 - 8ab^2c^7 + 10ab^4c^5 - 32a^2b^2c^6 + a^2b^4c^4 - 8a^3b^2c^5)))^{1/2}*(8a^2c^{12} - 16a^2c^{11} - 32a^3c^{10} + 16a^4c^9 + 24a^5c^8 - 2b^2c^{11} + 6b^3c^{10} - 8b^4c^9 + 8b^5c^8 - 6b^6c^7 + 2b^7c^6 + 36ab^2c^{10} - 50ab^3c^9 + 46ab^4c^8 - 14ab^5c^7 - 2ab^6c^6 + 72a^2b^2c^{10} + 88a^3b^2c^9 - 8a^4b^2c^8 - 80a^2b^2c^9 + 2a^2b^3c^8 + 24a^2b^4c^7 - 2a^2b^5c^6 - 68a^3b^2c^8 + 10a^3b^3c^7 + 2a^3b^4c^6 - 14a^4b^2c^7 - 24ab^2c^{11}))/c^4)*((b^8 - a^2b^6 + 8a^4c^4 + 8a^5c^3 - b^5*(-(4ac - b^2)^3)^{1/2} + 8a^3b^4c + a^2b^3*(-(4ac - b^2)^3)^{1/2} + 33a^2b^4c^2 - 38a^3b^2c^3 - 18a^4b^2c^2 - 10ab^6c - 3a^2b^2c^2*(-(4ac - b^2)^3)^{1/2} + 4ab^3c*(-(4ac - b^2)^3)^{1/2} - 2a^3b^2c*(-(4ac - b^2)^3)^{1/2}))/((2*(16a^2c^8 + 32a^3c^7 + 16a^4c^6 + b^4c^6 - b^6c^4 - 8ab^2c^7 + 10ab^4c^5 - 32a^2b^2c^6 + a^2b^4c^4 - 8a^3b^2c^5)))^{1/2} + (8192\tan(x/2)*(2a^3c^8 - 2a^4c^7 + 6a^5c^6 + 10a^6c^5 + 2b^4c^7 - 6b^5c^6 + 8b^6c^5 - 8b^7c^4 + 6b^8c^3 - 2b^9c^2 - 8ab^2c^8 + 24ab^3c^7 - 38ab^4c^6 + 56ab^5c^5 - 50ab^6c^4 + 14ab^7c^3 + 2ab^8c^2 + 18a^3b^2c^7 + 12a^4b^2c^6 - 22a^5b^2c^5 + 23a^2b^2c^7 - 99a^2b^3c^6 + 93a^2b^4c^5 + 7a^2b^5c^4 - 24a^2b^6c^3 + 2a^2b^7c^2 + 37a^3b^2c^6 - 122a^3b^3c^5 + 59a^3b^4c^4 - 10a^3b^5c^3 - 2a^3b^6c^2 + 11a^4b^2c^5 + 15a^4b^3c^4 + 14a^4b^4c^3 - 27a^5b^2c^4))/c^4)*((b^8 - a^2b^6 + 8a^4c^4 + 8a^5c^3 - b^5*(-(4ac - b^2)^3)^{1/2} + 8a^3b^4c + a^2b^3*(-(4ac - b^2)^3)^{1/2} + 33a^2b^4c^2 - 38a^3b^2c^3 - 18a^4b^2c^2 - 10ab^6c - 3a^2b^2c^2*(-(4ac - b^2)^3)^{1/2} + 4ab^3c*(-(4ac - b^2)^3)^{1/2} - 2a^3b^2c*(-(4ac - b^2)^3)^{1/2}))/((2*(16a^2c^8 + 32a^3c^7 + 16a^4c^6 + b^4c^6 - b^6c^4 - 8ab^2c^7 + 10ab^4c^5 - 32a^2b^2c^6 + a^2b^4c^4 - 8a^3b^2c^5)))^{1/2} + (8192*(2a^5c^5 - a^4c^6 - 3b^9c + 3a^6c^4 + b^6c^4 - 4b^7c^3 + 6b^8c^2 - 5ab^4c^5 + 23ab^5c^4 - 38ab^6c^3 + 16ab^7c^2 + a^2b^7c - 5a^3b^6c + 6a^4b^2c^5 + 2a^4b^5c + 10a^5b^2c^4 + 8a^6b^2c^3 + 4a^2b^2c^6 - 28a^2b^3c^5 + 57a^2b^4c^4 - 3a^2b^5c^3 - 41a^2b^6c^2 - 3a^3b^2c^5 - 55a^3b^3c^4 + 91a^3b^4c^3 + 4a^3b^5c^2 - 24a^4b^2c^4 - 36a^4b^3c^3 + 25a^4b^4c^2 - 20a^5b^2c^3 - 10a^5b^3c^2 + 5ab^8c))/c^4)*((b^8 - a^2b^6 + 8a^4c^4 + 8a^5c^3 - b^5*(-(4ac - b^2)^3)^{1/2} + 8a^3b^4c + a^2b^3*(-(4ac - b^2)^3)^{1/2} + 33a^2b^4c^2 - 38a^3b^2c^3 - 18a^4b^2c^2 - 10ab^6c - 3a^2b^2c^2*(-(4ac - b^2)^3)^{1/2} + 4ab^3c*(-(4ac - b^2)^3)^{1/2} - 2a^3b^2c*(-(4ac - b^2)^3)^{1/2}))/((2*(16a^2c^8 + 32a^3c^7 + 16a^4c^6 + b^4c^6 - b^6c^4 - 8ab^2c^7 + 10ab^4c^5 - 32a^2b^2c^6 + a^2b^4c^4 - 8a^3b^2c^5)))^{1/2} - (8192\tan(x/2)*(5ab^8 + b^8c - b^9 - 10a^2b^7 + 10a^3b^6 - 5a^4b^5 + a^5b^4 + a^6c^3 + a^7c^2
\end{aligned}$$

$$\begin{aligned}
& - 6*a*b^6*c^2 - 20*a^2*b^6*c + 40*a^3*b^5*c - 35*a^4*b^4*c + 14*a^5*b^3*c - \\
& a^6*b*c^2 - 2*a^6*b^2*c + 9*a^2*b^4*c^3 + 11*a^2*b^5*c^2 - 2*a^3*b^2*c^4 - \\
& 18*a^3*b^3*c^3 + 5*a^3*b^4*c^2 + 10*a^4*b^2*c^3 - 20*a^4*b^3*c^2 + 10*a^5* \\
& b^2*c^2 + 2*a*b^7*c)) / c^4 * ((b^8 - a^2*b^6 + 8*a^4*c^4 + 8*a^5*c^3 - b^5*(- \\
& (4*a*c - b^2)^3)^{1/2} + 8*a^3*b^4*c + a^2*b^3*(-(4*a*c - b^2)^3)^{1/2} + 3 \\
& 3*a^2*b^4*c^2 - 38*a^3*b^2*c^3 - 18*a^4*b^2*c^2 - 10*a*b^6*c - 3*a^2*b*c^2* \\
& (- (4*a*c - b^2)^3)^{1/2} + 4*a*b^3*c*(-(4*a*c - b^2)^3)^{1/2} - 2*a^3*b*c*(- \\
& (- (4*a*c - b^2)^3)^{1/2})) / (2*(16*a^2*c^8 + 32*a^3*c^7 + 16*a^4*c^6 + b^4*c^6 \\
& - b^6*c^4 - 8*a*b^2*c^7 + 10*a*b^4*c^5 - 32*a^2*b^2*c^6 + a^2*b^4*c^4 - 8* \\
& a^3*b^2*c^5))^{1/2} + (((((8192*(4*a^2*c^10 - 4*a^3*c^9 - 20*a^4*c^8 - 12* \\
& a^5*c^7 + b^4*c^8 - 5*b^5*c^7 + 7*b^6*c^6 - 3*b^7*c^5 - 5*a*b^2*c^9 + 31*a* \\
& b^3*c^8 - 46*a*b^4*c^7 + 15*a*b^5*c^6 + 5*a*b^6*c^5 - 44*a^2*b*c^9 - 64*a^3 \\
& *b*c^8 - 28*a^4*b*c^7 - 8*a^5*b*c^6 + 73*a^2*b^2*c^8 + 4*a^2*b^3*c^7 - 40*a \\
& ^2*b^4*c^6 + a^2*b^5*c^5 + 85*a^3*b^2*c^7 + 3*a^3*b^3*c^6 - 5*a^3*b^4*c^5 + \\
& 23*a^4*b^2*c^6 + 2*a^4*b^3*c^5)) / c^4 + (8192*tan(x/2)*((b^8 - a^2*b^6 + 8* \\
& a^4*c^4 + 8*a^5*c^3 - b^5*(-(4*a*c - b^2)^3)^{1/2} + 8*a^3*b^4*c + a^2*b^3* \\
& (- (4*a*c - b^2)^3)^{1/2} + 33*a^2*b^4*c^2 - 38*a^3*b^2*c^3 - 18*a^4*b^2*c^2 \\
& - 10*a*b^6*c - 3*a^2*b*c^2*(-(4*a*c - b^2)^3)^{1/2} + 4*a*b^3*c*(-(4*a*c - \\
& b^2)^3)^{1/2} - 2*a^3*b*c*(-(4*a*c - b^2)^3)^{1/2})) / (2*(16*a^2*c^8 + 32*a^ \\
& 3*c^7 + 16*a^4*c^6 + b^4*c^6 - b^6*c^4 - 8*a*b^2*c^7 + 10*a*b^4*c^5 - 32*a^ \\
& 2*b^2*c^6 + a^2*b^4*c^4 - 8*a^3*b^2*c^5))^{1/2} * (8*a*c^12 - 16*a^2*c^11 - \\
& 32*a^3*c^10 + 16*a^4*c^9 + 24*a^5*c^8 - 2*b^2*c^11 + 6*b^3*c^10 - 8*b^4*c^9 \\
& + 8*b^5*c^8 - 6*b^6*c^7 + 2*b^7*c^6 + 36*a*b^2*c^10 - 50*a*b^3*c^9 + 46*a* \\
& b^4*c^8 - 14*a*b^5*c^7 - 2*a*b^6*c^6 + 72*a^2*b*c^10 + 88*a^3*b*c^9 - 8*a^4 \\
& *b*c^8 - 80*a^2*b^2*c^9 + 2*a^2*b^3*c^8 + 24*a^2*b^4*c^7 - 2*a^2*b^5*c^6 - \\
& 68*a^3*b^2*c^8 + 10*a^3*b^3*c^7 + 2*a^3*b^4*c^6 - 14*a^4*b^2*c^7 - 24*a*b*c \\
& ^11)) / c^4 * ((b^8 - a^2*b^6 + 8*a^4*c^4 + 8*a^5*c^3 - b^5*(-(4*a*c - b^2)^3) \\
& ^{1/2} + 8*a^3*b^4*c + a^2*b^3*(-(4*a*c - b^2)^3)^{1/2} + 33*a^2*b^4*c^2 - \\
& 38*a^3*b^2*c^3 - 18*a^4*b^2*c^2 - 10*a*b^6*c - 3*a^2*b*c^2*(-(4*a*c - b^2)^ \\
& 3)^{1/2} + 4*a*b^3*c*(-(4*a*c - b^2)^3)^{1/2} - 2*a^3*b*c*(-(4*a*c - b^2)^3 \\
& )^{1/2})) / (2*(16*a^2*c^8 + 32*a^3*c^7 + 16*a^4*c^6 + b^4*c^6 - b^6*c^4 - 8*a \\
& *b^2*c^7 + 10*a*b^4*c^5 - 32*a^2*b^2*c^6 + a^2*b^4*c^4 - 8*a^3*b^2*c^5))^{1/2} - \\
& (8192*tan(x/2)*(2*a^3*c^8 - 2*a^4*c^7 + 6*a^5*c^6 + 10*a^6*c^5 + 2*b \\
& ^4*c^7 - 6*b^5*c^6 + 8*b^6*c^5 - 8*b^7*c^4 + 6*b^8*c^3 - 2*b^9*c^2 - 8*a*b^ \\
& 2*c^8 + 24*a*b^3*c^7 - 38*a*b^4*c^6 + 56*a*b^5*c^5 - 50*a*b^6*c^4 + 14*a*b^ \\
& 7*c^3 + 2*a*b^8*c^2 + 18*a^3*b*c^7 + 12*a^4*b*c^6 - 22*a^5*b*c^5 + 23*a^2*b \\
& ^2*c^7 - 99*a^2*b^3*c^6 + 93*a^2*b^4*c^5 + 7*a^2*b^5*c^4 - 24*a^2*b^6*c^3 + \\
& 2*a^2*b^7*c^2 + 37*a^3*b^2*c^6 - 122*a^3*b^3*c^5 + 59*a^3*b^4*c^4 - 10*a^3 \\
& *b^5*c^3 - 2*a^3*b^6*c^2 + 11*a^4*b^2*c^5 + 15*a^4*b^3*c^4 + 14*a^4*b^4*c^3 \\
& - 27*a^5*b^2*c^4)) / c^4 * ((b^8 - a^2*b^6 + 8*a^4*c^4 + 8*a^5*c^3 - b^5*(-(4 \\
& *a*c - b^2)^3)^{1/2} + 8*a^3*b^4*c + a^2*b^3*(-(4*a*c - b^2)^3)^{1/2} + 33* \\
& a^2*b^4*c^2 - 38*a^3*b^2*c^3 - 18*a^4*b^2*c^2 - 10*a*b^6*c - 3*a^2*b*c^2*(- \\
& (4*a*c - b^2)^3)^{1/2} + 4*a*b^3*c*(-(4*a*c - b^2)^3)^{1/2} - 2*a^3*b*c*(-( \\
& 4*a*c - b^2)^3)^{1/2})) / (2*(16*a^2*c^8 + 32*a^3*c^7 + 16*a^4*c^6 + b^4*c^6 - \\
& b^6*c^4 - 8*a*b^2*c^7 + 10*a*b^4*c^5 - 32*a^2*b^2*c^6 + a^2*b^4*c^4 - 8*a^
\end{aligned}$$

$$\begin{aligned}
& 3*b^2*c^5))^{(1/2)} + (8192*(2*a^5*c^5 - a^4*c^6 - 3*b^9*c + 3*a^6*c^4 + b^6 \\
& *c^4 - 4*b^7*c^3 + 6*b^8*c^2 - 5*a*b^4*c^5 + 23*a*b^5*c^4 - 38*a*b^6*c^3 + \\
& 16*a*b^7*c^2 + a^2*b^7*c - 5*a^3*b^6*c + 6*a^4*b*c^5 + 2*a^4*b^5*c + 10*a^5 \\
& *b*c^4 + 8*a^6*b*c^3 + 4*a^2*b^2*c^6 - 28*a^2*b^3*c^5 + 57*a^2*b^4*c^4 - 3* \\
& a^2*b^5*c^3 - 41*a^2*b^6*c^2 - 3*a^3*b^2*c^5 - 55*a^3*b^3*c^4 + 91*a^3*b^4* \\
& c^3 + 4*a^3*b^5*c^2 - 24*a^4*b^2*c^4 - 36*a^4*b^3*c^3 + 25*a^4*b^4*c^2 - 20 \\
& *a^5*b^2*c^3 - 10*a^5*b^3*c^2 + 5*a*b^8*c))/c^4)*((b^8 - a^2*b^6 + 8*a^4*c^ \\
& 4 + 8*a^5*c^3 - b^5*(-(4*a*c - b^2)^3)^{(1/2)} + 8*a^3*b^4*c + a^2*b^3*(-(4*a \\
& *c - b^2)^3)^{(1/2)} + 33*a^2*b^4*c^2 - 38*a^3*b^2*c^3 - 18*a^4*b^2*c^2 - 10* \\
& a*b^6*c - 3*a^2*b*c^2*(-(4*a*c - b^2)^3)^{(1/2)} + 4*a*b^3*c*(-(4*a*c - b^2)^ \\
& 3)^{(1/2)} - 2*a^3*b*c*(-(4*a*c - b^2)^3)^{(1/2)})/(2*(16*a^2*c^8 + 32*a^3*c^7 \\
& + 16*a^4*c^6 + b^4*c^6 - b^6*c^4 - 8*a*b^2*c^7 + 10*a*b^4*c^5 - 32*a^2*b^2* \\
& c^6 + a^2*b^4*c^4 - 8*a^3*b^2*c^5))^{(1/2)} + (8192*tan(x/2)*(5*a*b^8 + b^8*c \\
& - b^9 - 10*a^2*b^7 + 10*a^3*b^6 - 5*a^4*b^5 + a^5*b^4 + a^6*c^3 + a^7*c^2 \\
& - 6*a*b^6*c^2 - 20*a^2*b^6*c + 40*a^3*b^5*c - 35*a^4*b^4*c + 14*a^5*b^3*c \\
& - a^6*b*c^2 - 2*a^6*b^2*c + 9*a^2*b^4*c^3 + 11*a^2*b^5*c^2 - 2*a^3*b^2*c^4 \\
& - 18*a^3*b^3*c^3 + 5*a^3*b^4*c^2 + 10*a^4*b^2*c^3 - 20*a^4*b^3*c^2 + 10*a^5 \\
& *b^2*c^2 + 2*a*b^7*c))/c^4)*((b^8 - a^2*b^6 + 8*a^4*c^4 + 8*a^5*c^3 - b^5*( \\
& -(4*a*c - b^2)^3)^{(1/2)} + 8*a^3*b^4*c + a^2*b^3*(-(4*a*c - b^2)^3)^{(1/2)} + \\
& 33*a^2*b^4*c^2 - 38*a^3*b^2*c^3 - 18*a^4*b^2*c^2 - 10*a*b^6*c - 3*a^2*b*c^2 \\
& *(-(4*a*c - b^2)^3)^{(1/2)} + 4*a*b^3*c*(-(4*a*c - b^2)^3)^{(1/2)} - 2*a^3*b*c* \\
& (-(4*a*c - b^2)^3)^{(1/2)})/(2*(16*a^2*c^8 + 32*a^3*c^7 + 16*a^4*c^6 + b^4*c^ \\
& 6 - b^6*c^4 - 8*a*b^2*c^7 + 10*a*b^4*c^5 - 32*a^2*b^2*c^6 + a^2*b^4*c^4 - 8 \\
& *a^3*b^2*c^5))^{(1/2)} - (16384*(a^7*b + a^3*b^5 - 4*a^4*b^4 + 6*a^5*b^3 - 4 \\
& *a^6*b^2 - a^3*b^4*c + 2*a^4*b^3*c - 2*a^5*b^2*c + a^4*b^2*c^2 + a^6*b*c))/ \\
& c^4))*((b^8 - a^2*b^6 + 8*a^4*c^4 + 8*a^5*c^3 - b^5*(-(4*a*c - b^2)^3)^{(1/2)} \\
& ) + 8*a^3*b^4*c + a^2*b^3*(-(4*a*c - b^2)^3)^{(1/2)} + 33*a^2*b^4*c^2 - 38*a^ \\
& 3*b^2*c^3 - 18*a^4*b^2*c^2 - 10*a*b^6*c - 3*a^2*b*c^2*(-(4*a*c - b^2)^3)^{(1 \\
& /2)} + 4*a*b^3*c*(-(4*a*c - b^2)^3)^{(1/2)} - 2*a^3*b*c*(-(4*a*c - b^2)^3)^{(1 \\
& /2)})/(2*(16*a^2*c^8 + 32*a^3*c^7 + 16*a^4*c^6 + b^4*c^6 - b^6*c^4 - 8*a*b^2* \\
& c^7 + 10*a*b^4*c^5 - 32*a^2*b^2*c^6 + a^2*b^4*c^4 - 8*a^3*b^2*c^5))^{(1/2)}* \\
& 2i - (2*b*atan(((b*((8192*tan(x/2)*(5*a*b^8 + b^8*c - b^9 - 10*a^2*b^7 + 10 \\
& *a^3*b^6 - 5*a^4*b^5 + a^5*b^4 + a^6*c^3 + a^7*c^2 - 6*a*b^6*c^2 - 20*a^2*b \\
& ^6*c + 40*a^3*b^5*c - 35*a^4*b^4*c + 14*a^5*b^3*c - a^6*b*c^2 - 2*a^6*b^2*c \\
& + 9*a^2*b^4*c^3 + 11*a^2*b^5*c^2 - 2*a^3*b^2*c^4 - 18*a^3*b^3*c^3 + 5*a^3* \\
& b^4*c^2 + 10*a^4*b^2*c^3 - 20*a^4*b^3*c^2 + 10*a^5*b^2*c^2 + 2*a*b^7*c))/c^ \\
& 4 - (b*((8192*(2*a^5*c^5 - a^4*c^6 - 3*b^9*c + 3*a^6*c^4 + b^6*c^4 - 4*b^7* \\
& c^3 + 6*b^8*c^2 - 5*a*b^4*c^5 + 23*a*b^5*c^4 - 38*a*b^6*c^3 + 16*a*b^7*c^2 \\
& + a^2*b^7*c - 5*a^3*b^6*c + 6*a^4*b*c^5 + 2*a^4*b^5*c + 10*a^5*b*c^4 + 8*a^ \\
& 6*b*c^3 + 4*a^2*b^2*c^6 - 28*a^2*b^3*c^5 + 57*a^2*b^4*c^4 - 3*a^2*b^5*c^3 - \\
& 41*a^2*b^6*c^2 - 3*a^3*b^2*c^5 - 55*a^3*b^3*c^4 + 91*a^3*b^4*c^3 + 4*a^3*b \\
& ^5*c^2 - 24*a^4*b^2*c^4 - 36*a^4*b^3*c^3 + 25*a^4*b^4*c^2 - 20*a^5*b^2*c^3 \\
& - 10*a^5*b^3*c^2 + 5*a*b^8*c))/c^4 + (b*((b*((8192*(4*a^2*c^10 - 4*a^3*c^9 \\
& - 20*a^4*c^8 - 12*a^5*c^7 + b^4*c^8 - 5*b^5*c^7 + 7*b^6*c^6 - 3*b^7*c^5 - 5 \\
& *a*b^2*c^9 + 31*a*b^3*c^8 - 46*a*b^4*c^7 + 15*a*b^5*c^6 + 5*a*b^6*c^5 - 44*
\end{aligned}$$

$$\begin{aligned}
& a^2 b^c^9 - 64 a^3 b^c^8 - 28 a^4 b^c^7 - 8 a^5 b^c^6 + 73 a^2 b^2 c^8 + 4 a^2 b^3 c^7 \\
& - 40 a^2 b^4 c^6 + a^2 b^5 c^5 + 85 a^3 b^2 c^7 + 3 a^3 b^3 c^6 - 5 a^3 b^4 c^5 + 23 a^4 b^2 c^6 \\
& + 2 a^4 b^3 c^5) / c^4 - (b \tan(x/2) * (8 a^c^{12} - 16 a^2 c^{11} - 32 a^3 c^{10} + 16 a^4 c^9 + 24 a^5 c^8 - 2 b^2 c^{11} + 6 \\
& * b^3 c^{10} - 8 b^4 c^9 + 8 b^5 c^8 - 6 b^6 c^7 + 2 b^7 c^6 + 36 a b^2 c^{10} - 50 a b^3 c^9 \\
& + 46 a b^4 c^8 - 14 a b^5 c^7 - 2 a b^6 c^6 + 72 a^2 b^c^{10} + 88 a^3 b^c^9 - 8 a^4 b^c^8 \\
& - 80 a^2 b^2 c^9 + 2 a^2 b^3 c^8 + 24 a^2 b^4 c^7 - 2 a^2 b^5 c^6 - 68 a^3 b^2 c^8 + 10 a^3 b^3 c^7 \\
& + 2 a^3 b^4 c^6 - 14 a^4 b^2 c^7 - 24 a b^c^{11}) * 8192 i) / c^6) * i) / c^2 + (8192 * \tan(x/2) * (2 a^3 c^8 - 2 a^4 c^7 \\
& + 6 a^5 c^6 + 10 a^6 c^5 + 2 b^4 c^7 - 6 b^5 c^6 + 8 b^6 c^5 - 8 b^7 c^4 + 6 b^8 c^3 - 2 b^9 c^2 \\
& - 8 a b^2 c^8 + 24 a b^3 c^7 - 38 a b^4 c^6 + 56 a b^5 c^5 - 50 a b^6 c^4 + 14 a b^7 c^3 + 2 a b^8 c^2 \\
& + 18 a^3 b^c^7 + 12 a^4 b^c^6 - 22 a^5 b^c^5 + 23 a^2 b^2 c^7 - 99 a^2 b^3 c^6 + 93 a^2 b^4 c^5 \\
& + 7 a^2 b^5 c^4 - 24 a^2 b^6 c^3 + 2 a^2 b^7 c^2 + 37 a^3 b^2 c^6 - 122 a^3 b^3 c^5 + 59 a^3 b^4 c^4 \\
& - 10 a^3 b^5 c^3 - 2 a^3 b^6 c^2 + 11 a^4 b^2 c^5 + 15 a^4 b^3 c^4 + 14 a^4 b^4 c^3 - 27 a^5 b^2 c^4) / c^4) * i) / c^2) * \\
& i) / c^2 + (b * ((8192 * \tan(x/2) * (5 a^b^8 + b^8 c - b^9 - 10 a^2 b^7 + 10 a^3 b^6 - 5 a^4 b^5 \\
& + a^5 b^4 + a^6 c^3 + a^7 c^2 - 6 a b^6 c^2 - 20 a^2 b^6 c + 40 a^3 b^5 c - 35 a^4 b^4 c + 14 a^5 b^3 c \\
& - a^6 b^c^2 - 2 a^6 b^2 c + 9 a^2 b^4 c^3 + 11 a^2 b^5 c^2 - 2 a^3 b^2 c^4 - 18 a^3 b^3 c^3 + 5 a^3 b^4 c^2 \\
& + 10 a^4 b^2 c^3 - 20 a^4 b^3 c^2 + 10 a^5 b^2 c^2 + 2 a b^7 c)) / c^4 + (b * ((8192 * (2 a^5 c^5 - a^4 c^6 \\
& - 3 b^9 c + 3 a^6 c^4 + b^6 c^4 - 4 b^7 c^3 + 6 b^8 c^2 - 5 a b^4 c^5 + 23 a b^5 c^4 - 38 a b^6 c^3 \\
& + 16 a b^7 c^2 + a^2 b^7 c - 5 a^3 b^6 c + 6 a^4 b^c^5 + 2 a^4 b^5 c + 10 a^5 b^c^4 + 8 a^6 b^c^3 \\
& + 4 a^2 b^2 c^6 - 28 a^2 b^3 c^5 + 57 a^2 b^4 c^4 - 3 a^2 b^5 c^3 - 41 a^2 b^6 c^2 - 3 a^3 b^2 c^5 \\
& - 55 a^3 b^3 c^4 + 91 a^3 b^4 c^3 + 4 a^3 b^5 c^2 - 24 a^4 b^2 c^4 - 36 a^4 b^3 c^3 + 25 a^4 b^4 c^2 - 20 a^5 b^2 c^3 \\
& - 10 a^5 b^3 c^2 + 5 a b^8 c)) / c^4 + (b * ((b * ((8192 * (4 a^2 c^{10} - 4 a^3 c^9 - 20 a^4 c^8 \\
& - 12 a^5 c^7 + b^4 c^8 - 5 b^5 c^7 + 7 b^6 c^6 - 3 b^7 c^5 - 5 a b^2 c^9 + 31 a b^3 c^8 - 46 a b^4 c^7 \\
& + 15 a b^5 c^6 + 5 a b^6 c^5 - 44 a^2 b^c^9 - 64 a^3 b^c^8 - 28 a^4 b^c^7 - 8 a^5 b^c^6 + 73 a^2 b^2 c^8 + 4 a^2 b^3 c^7 \\
& - 40 a^2 b^4 c^6 + a^2 b^5 c^5 + 85 a^3 b^2 c^7 + 3 a^3 b^3 c^6 - 5 a^3 b^4 c^5 + 23 a^4 b^2 c^6 + 2 a^4 b^3 c^5) / c^4 \\
& + (b \tan(x/2) * (8 a^c^{12} - 16 a^2 c^{11} - 32 a^3 c^{10} + 16 a^4 c^9 + 24 a^5 c^8 - 2 b^2 c^{11} + 6 \\
& * b^3 c^{10} - 8 b^4 c^9 + 8 b^5 c^8 - 6 b^6 c^7 + 2 b^7 c^6 + 36 a b^2 c^{10} - 50 a b^3 c^9 + 46 a b^4 c^8 \\
& - 14 a b^5 c^7 - 2 a b^6 c^6 + 72 a^2 b^c^{10} + 88 a^3 b^c^9 - 8 a^4 b^c^8 - 80 a^2 b^2 c^9 + 2 a^2 b^3 c^8 \\
& + 24 a^2 b^4 c^7 - 2 a^2 b^5 c^6 - 68 a^3 b^2 c^8 + 10 a^3 b^3 c^7 + 2 a^3 b^4 c^6 - 14 a^4 b^2 c^7 - 24 a b^c^{11}) * 8192 i) / c^6) * i) / c^2 - (8192 * \tan(x/2) * (2 a^3 c^8 - 2 a^4 c^7 \\
& + 6 a^5 c^6 + 10 a^6 c^5 + 2 b^4 c^7 - 6 b^5 c^6 + 8 b^6 c^5 - 8 b^7 c^4 + 6 b^8 c^3 - 2 b^9 c^2 - 8 a b^2 c^8 \\
& + 24 a b^3 c^7 - 38 a b^4 c^6 + 56 a b^5 c^5 - 50 a b^6 c^4 + 14 a b^7 c^3 + 2 a b^8 c^2 + 18 a^3 b^c^7 \\
& + 12 a^4 b^c^6 - 22 a^5 b^c^5 + 23 a^2 b^2 c^7 - 99 a^2 b^3 c^6 + 93 a^2 b^4 c^5 + 7 a^2 b^5 c^4 - 24 a^2 b^6 c^3 \\
& + 2 a^2 b^7 c^2 + 37 a^3 b^2 c^6 - 122 a^3 b^3 c^5 + 59 a^3 b^4 c^4 - 10 a^3 b^5 c^3 - 2 a^3 b^6 c^2 + 11 a^4 b^c^7
\end{aligned}$$

$$\begin{aligned}
& b^2c^5 + 15a^4b^3c^4 + 14a^4b^4c^3 - 27a^5b^2c^4)/c^4)*1i)/c^2)* \\
& 1i)/c^2))/c^2)/((16384*(a^7b + a^3b^5 - 4a^4b^4 + 6a^5b^3 - 4a^6b^2 \\
& - a^3b^4c + 2a^4b^3c - 2a^5b^2c + a^4b^2c^2 + a^6b^*c))/c^4 + (b \\
& *((8192*\tan(x/2)*(5a*b^8 + b^8*c - b^9 - 10a^2b^7 + 10a^3b^6 - 5a^4b \\
& ^5 + a^5b^4 + a^6c^3 + a^7c^2 - 6a*b^6c^2 - 20a^2b^6c + 40a^3b^5c \\
& - 35a^4b^4c + 14a^5b^3c - a^6b^*c^2 - 2a^6b^2c + 9a^2b^4c^3 + \\
& 11a^2b^5c^2 - 2a^3b^2c^4 - 18a^3b^3c^3 + 5a^3b^4c^2 + 10a^4b \\
& ^2c^3 - 20a^4b^3c^2 + 10a^5b^2c^2 + 2a*b^7c))/c^4 - (b*((8192*(2a \\
& ^5c^5 - a^4c^6 - 3b^9c + 3a^6c^4 + b^6c^4 - 4b^7c^3 + 6b^8c^2 - \\
& 5a*b^4c^5 + 23a*b^5c^4 - 38a*b^6c^3 + 16a*b^7c^2 + a^2b^7c - 5a^ \\
& 3b^6c + 6a^4b^*c^5 + 2a^4b^5c + 10a^5b^*c^4 + 8a^6b^*c^3 + 4a^2b^ \\
& 2c^6 - 28a^2b^3c^5 + 57a^2b^4c^4 - 3a^2b^5c^3 - 41a^2b^6c^2 - \\
& 3a^3b^2c^5 - 55a^3b^3c^4 + 91a^3b^4c^3 + 4a^3b^5c^2 - 24a^4b^ \\
& 2c^4 - 36a^4b^3c^3 + 25a^4b^4c^2 - 20a^5b^2c^3 - 10a^5b^3c^2 + \\
& 5a*b^8c))/c^4 + (b*((b*((8192*(4a^2c^10 - 4a^3c^9 - 20a^4c^8 - 12 \\
& a^5c^7 + b^4c^8 - 5b^5c^7 + 7b^6c^6 - 3b^7c^5 - 5a*b^2c^9 + 31a* \\
& b^3c^8 - 46a*b^4c^7 + 15a*b^5c^6 + 5a*b^6c^5 - 44a^2b^*c^9 - 64a^3 \\
& *b^*c^8 - 28a^4b^*c^7 - 8a^5b^*c^6 + 73a^2b^2c^8 + 4a^2b^3c^7 - 40a \\
& ^2b^4c^6 + a^2b^5c^5 + 85a^3b^2c^7 + 3a^3b^3c^6 - 5a^3b^4c^5 + \\
& 23a^4b^2c^6 + 2a^4b^3c^5))/c^4 - (b*\tan(x/2)*(8a^*c^12 - 16a^2c^11 \\
& - 32a^3c^10 + 16a^4c^9 + 24a^5c^8 - 2b^2c^11 + 6b^3c^10 - 8b^4c \\
& ^9 + 8b^5c^8 - 6b^6c^7 + 2b^7c^6 + 36a*b^2c^10 - 50a*b^3c^9 + 46 \\
& *a*b^4c^8 - 14a*b^5c^7 - 2a*b^6c^6 + 72a^2b^*c^10 + 88a^3b^*c^9 - 8 \\
& a^4b^*c^8 - 80a^2b^2c^9 + 2a^2b^3c^8 + 24a^2b^4c^7 - 2a^2b^5c^6 \\
& - 68a^3b^2c^8 + 10a^3b^3c^7 + 2a^3b^4c^6 - 14a^4b^2c^7 - 24a* \\
& b^*c^11)*8192i)/c^6)*1i)/c^2 + (8192*\tan(x/2)*(2a^3c^8 - 2a^4c^7 + 6a^5 \\
& *c^6 + 10a^6c^5 + 2b^4c^7 - 6b^5c^6 + 8b^6c^5 - 8b^7c^4 + 6b^8c \\
& ^3 - 2b^9c^2 - 8a*b^2c^8 + 24a*b^3c^7 - 38a*b^4c^6 + 56a*b^5c^5 - \\
& 50a*b^6c^4 + 14a*b^7c^3 + 2a*b^8c^2 + 18a^3b^*c^7 + 12a^4b^*c^6 - \\
& 22a^5b^*c^5 + 23a^2b^2c^7 - 99a^2b^3c^6 + 93a^2b^4c^5 + 7a^2b^5 \\
& *c^4 - 24a^2b^6c^3 + 2a^2b^7c^2 + 37a^3b^2c^6 - 122a^3b^3c^5 + \\
& 59a^3b^4c^4 - 10a^3b^5c^3 - 2a^3b^6c^2 + 11a^4b^2c^5 + 15a^4b \\
& ^3c^4 + 14a^4b^4c^3 - 27a^5b^2c^4))/c^4)*1i)/c^2)*1i)/c^2)*1i)/c^2 - \\
& (b*((8192*\tan(x/2)*(5a*b^8 + b^8*c - b^9 - 10a^2b^7 + 10a^3b^6 - 5a^ \\
& 4b^5 + a^5b^4 + a^6c^3 + a^7c^2 - 6a*b^6c^2 - 20a^2b^6c + 40a^3b \\
& ^5c - 35a^4b^4c + 14a^5b^3c - a^6b^*c^2 - 2a^6b^2c + 9a^2b^4c^ \\
& 3 + 11a^2b^5c^2 - 2a^3b^2c^4 - 18a^3b^3c^3 + 5a^3b^4c^2 + 10a^ \\
& 4b^2c^3 - 20a^4b^3c^2 + 10a^5b^2c^2 + 2a*b^7c))/c^4 + (b*((8192*( \\
& 2a^5c^5 - a^4c^6 - 3b^9c + 3a^6c^4 + b^6c^4 - 4b^7c^3 + 6b^8c^2 \\
& - 5a*b^4c^5 + 23a*b^5c^4 - 38a*b^6c^3 + 16a*b^7c^2 + a^2b^7c - 5 \\
& *a^3b^6c + 6a^4b^*c^5 + 2a^4b^5c + 10a^5b^*c^4 + 8a^6b^*c^3 + 4a^2 \\
& *b^2c^6 - 28a^2b^3c^5 + 57a^2b^4c^4 - 3a^2b^5c^3 - 41a^2b^6c^2 \\
& - 3a^3b^2c^5 - 55a^3b^3c^4 + 91a^3b^4c^3 + 4a^3b^5c^2 - 24a^4 \\
& *b^2c^4 - 36a^4b^3c^3 + 25a^4b^4c^2 - 20a^5b^2c^3 - 10a^5b^3c^ \\
& 2 + 5a*b^8c))/c^4 + (b*((b*((8192*(4a^2c^10 - 4a^3c^9 - 20a^4c^8 -
\end{aligned}$$

$$\begin{aligned}
& 12a^5c^7 + b^4c^8 - 5b^5c^7 + 7b^6c^6 - 3b^7c^5 - 5a^2b^2c^9 + 31 \\
& a^3b^3c^8 - 46a^4b^4c^7 + 15a^5b^5c^6 + 5a^6b^6c^5 - 44a^2b^2c^9 - 64a^3b^3c^8 \\
& - 28a^4b^4c^7 - 8a^5b^5c^6 + 73a^2b^2c^8 + 4a^2b^3c^7 - 40a^2b^4c^6 + a^2b^5c^5 \\
& + 85a^3b^2c^7 + 3a^3b^3c^6 - 5a^3b^4c^5 + 23a^4b^2c^6 + 2a^4b^3c^5) / c^4 + (b \tan(x/2) * (8a^2c^{12} - 16a^2c^{11} \\
& - 32a^3c^{10} + 16a^4c^9 + 24a^5c^8 - 2b^2c^{11} + 6b^3c^{10} - 8b^4c^9 + 8b^5c^8 - 6b^6c^7 \\
& + 2b^7c^6 + 36a^2b^2c^{10} - 50a^2b^3c^9 + 46a^2b^4c^8 - 14a^2b^5c^7 - 2a^2b^6c^6 + 72a^2b^2c^{10} \\
& + 88a^3b^3c^9 - 8a^4b^4c^8 - 80a^2b^2c^9 + 2a^2b^3c^8 + 24a^2b^4c^7 - 2a^2b^5c^6 - 68a^3b^2c^8 \\
& + 10a^3b^3c^7 + 2a^3b^4c^6 - 14a^4b^2c^7 - 24a^4b^3c^6 - 68a^3b^2c^8 + 10a^3b^3c^7 + 2a^3b^4c^6 \\
& - 14a^4b^2c^7 - 24a^4b^3c^6) * 8192i) / c^6) * i) / c^2 - (8192 \tan(x/2) * (2a^3c^8 - 2a^4c^7 + 6a^5c^6 \\
& + 10a^6c^5 + 2b^4c^7 - 6b^5c^6 + 8b^6c^5 - 8b^7c^4 + 6b^8c^3 - 2b^9c^2 - 8a^2b^2c^8 \\
& + 24a^2b^3c^7 - 38a^2b^4c^6 + 56a^2b^5c^5 - 50a^2b^6c^4 + 14a^2b^7c^3 + 2a^2b^8c^2 + 18a^3b^3c^7 \\
& + 12a^4b^4c^6 - 22a^5b^5c^5 + 23a^2b^2c^7 - 99a^2b^3c^6 + 93a^2b^4c^5 + 7a^2b^5c^4 - 24a^2b^6c^3 \\
& + 2a^2b^7c^2 + 37a^3b^2c^6 - 122a^3b^3c^5 + 59a^3b^4c^4 - 10a^3b^5c^3 - 2a^3b^6c^2 + 11a^4b^2c^5 \\
& + 15a^4b^3c^4 + 14a^4b^4c^3 - 27a^5b^2c^4) / c^4) * i) / c^2) * i) / c^2) * i) / c^2) / c^2
\end{aligned}$$

### 3.15 $\int \frac{\cos^2(x)}{a+b \cos(x)+c \cos^2(x)} dx$

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#### Optimal result

Integrand size = 19, antiderivative size = 255

$$\int \frac{\cos^2(x)}{a+b \cos(x)+c \cos^2(x)} dx = \frac{x}{c} - \frac{2\left(b - \frac{b^2-2ac}{\sqrt{b^2-4ac}}\right) \arctan\left(\frac{\sqrt{b-2c-\sqrt{b^2-4ac}} \tan\left(\frac{x}{2}\right)}{\sqrt{b+2c-\sqrt{b^2-4ac}}}\right)}{c\sqrt{b-2c-\sqrt{b^2-4ac}}\sqrt{b+2c-\sqrt{b^2-4ac}}} - \frac{2\left(b + \frac{b^2-2ac}{\sqrt{b^2-4ac}}\right) \arctan\left(\frac{\sqrt{b-2c+\sqrt{b^2-4ac}} \tan\left(\frac{x}{2}\right)}{\sqrt{b+2c+\sqrt{b^2-4ac}}}\right)}{c\sqrt{b-2c+\sqrt{b^2-4ac}}\sqrt{b+2c+\sqrt{b^2-4ac}}}$$

[Out] x/c-2\*arctan((b-2\*c-(-4\*a\*c+b^2)^(1/2))^(1/2)\*tan(1/2\*x)/(b+2\*c-(-4\*a\*c+b^2)^(1/2))^(1/2))/(b+2\*c-(-4\*a\*c+b^2)^(1/2))/c/(b-2\*c-(-4\*a\*c+b^2)^(1/2))^(1/2)/(b+2\*c-(-4\*a\*c+b^2)^(1/2))^(1/2)-2\*arctan((b-2\*c+(-4\*a\*c+b^2)^(1/2))^(1/2)\*tan(1/2\*x)/(b+2\*c+(-4\*a\*c+b^2)^(1/2))^(1/2))/(b+2\*c+(-4\*a\*c+b^2)^(1/2))/c/(b-2\*c+(-4\*a\*c+b^2)^(1/2))^(1/2)/(b+2\*c+(-4\*a\*c+b^2)^(1/2))^(1/2)

#### Rubi [A] (verified)

Time = 1.30 (sec) , antiderivative size = 255, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 4,  $\frac{\text{number of rules}}{\text{integrand size}} = 0.211$ , Rules used = {3338, 3374, 2738, 211}

$$\int \frac{\cos^2(x)}{a+b \cos(x)+c \cos^2(x)} dx = -\frac{2\left(b - \frac{b^2-2ac}{\sqrt{b^2-4ac}}\right) \arctan\left(\frac{\tan\left(\frac{x}{2}\right)\sqrt{-\sqrt{b^2-4ac}+b-2c}}{\sqrt{-\sqrt{b^2-4ac}+b+2c}}\right)}{c\sqrt{-\sqrt{b^2-4ac}+b-2c}\sqrt{-\sqrt{b^2-4ac}+b+2c}} - \frac{2\left(\frac{b^2-2ac}{\sqrt{b^2-4ac}} + b\right) \arctan\left(\frac{\tan\left(\frac{x}{2}\right)\sqrt{\sqrt{b^2-4ac}+b-2c}}{\sqrt{\sqrt{b^2-4ac}+b+2c}}\right)}{c\sqrt{\sqrt{b^2-4ac}+b-2c}\sqrt{\sqrt{b^2-4ac}+b+2c}} + \frac{x}{c}$$

[In] Int[Cos[x]^2/(a + b\*Cos[x] + c\*Cos[x]^2),x]

[Out] x/c - (2\*(b - (b^2 - 2\*a\*c)/Sqrt[b^2 - 4\*a\*c])\*ArcTan[(Sqrt[b - 2\*c - Sqrt[b^2 - 4\*a\*c]]\*Tan[x/2])/Sqrt[b + 2\*c - Sqrt[b^2 - 4\*a\*c]])/(c\*Sqrt[b - 2\*c - Sqrt[b^2 - 4\*a\*c]]\*Sqrt[b + 2\*c - Sqrt[b^2 - 4\*a\*c]]) - (2\*(b + (b^2 - 2\*a\*c)/Sqrt[b^2 - 4\*a\*c])\*ArcTan[(Sqrt[b - 2\*c + Sqrt[b^2 - 4\*a\*c]]\*Tan[x/2])/Sqrt[b + 2\*c + Sqrt[b^2 - 4\*a\*c]])/(c\*Sqrt[b - 2\*c + Sqrt[b^2 - 4\*a\*c]]\*Sqrt[b + 2\*c + Sqrt[b^2 - 4\*a\*c]])

#### Rule 211

Int[((a\_) + (b\_)\*(x\_)^2)^(-1), x\_Symbol] := Simp[(Rt[a/b, 2]/a)\*ArcTan[x/Rt[a/b, 2]], x] /; FreeQ[{a, b}, x] && PosQ[a/b]

#### Rule 2738

Int[((a\_) + (b\_)\*sin[Pi/2 + (c\_) + (d\_)\*(x\_)])^(-1), x\_Symbol] := With[{e = FreeFactors[Tan[(c + d\*x)/2], x]}, Dist[2\*(e/d), Subst[Int[1/(a + b + (a - b)\*e^2\*x^2), x], x, Tan[(c + d\*x)/2]/e], x]] /; FreeQ[{a, b, c, d}, x] && NeQ[a^2 - b^2, 0]

#### Rule 3338

Int[cos[(d\_) + (e\_)\*(x\_)]^(m\_)\*((a\_) + cos[(d\_) + (e\_)\*(x\_)]^(n\_)\*(b\_) + cos[(d\_) + (e\_)\*(x\_)]^(n2\_)\*(c\_))^(p\_), x\_Symbol] := Int[ExpandTrig[cos[d + e\*x]^m\*(a + b\*cos[d + e\*x]^n + c\*cos[d + e\*x]^(2\*n))^p, x], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[n2, 2\*n] && NeQ[b^2 - 4\*a\*c, 0] && IntegersQ[m, n, p]

#### Rule 3374

Int[(cos[(d\_) + (e\_)\*(x\_)]\*(B\_) + (A\_))/((a\_) + cos[(d\_) + (e\_)\*(x\_)]\*(b\_) + cos[(d\_) + (e\_)\*(x\_)]^2\*(c\_)), x\_Symbol] := Module[{q = Rt[b^2 - 4\*a\*c, 2]}, Dist[B + (b\*B - 2\*A\*c)/q, Int[1/(b + q + 2\*c\*Cos[d + e\*x]), x], x] + Dist[B - (b\*B - 2\*A\*c)/q, Int[1/(b - q + 2\*c\*Cos[d + e\*x]), x], x]] /; FreeQ[{a, b, c, d, e, A, B}, x] && NeQ[b^2 - 4\*a\*c, 0]

#### Rubi steps

$$\begin{aligned} \text{integral} &= \int \left( \frac{1}{c} + \frac{-a - b \cos(x)}{c(a + b \cos(x) + c \cos^2(x))} \right) dx \\ &= \frac{x}{c} + \frac{\int \frac{-a - b \cos(x)}{a + b \cos(x) + c \cos^2(x)} dx}{c} \\ &= \frac{x}{c} - \frac{\left(b - \frac{b^2 - 2ac}{\sqrt{b^2 - 4ac}}\right) \int \frac{1}{b - \sqrt{b^2 - 4ac} + 2c \cos(x)} dx}{c} - \frac{\left(b + \frac{b^2 - 2ac}{\sqrt{b^2 - 4ac}}\right) \int \frac{1}{b + \sqrt{b^2 - 4ac} + 2c \cos(x)} dx}{c} \end{aligned}$$



$$\begin{aligned}
&= \frac{x}{c} - \frac{\left(2\left(b - \frac{b^2-2ac}{\sqrt{b^2-4ac}}\right)\right) \text{Subst}\left(\int \frac{1}{b+2c-\sqrt{b^2-4ac}+(b-2c-\sqrt{b^2-4ac})x^2} dx, x, \tan\left(\frac{x}{2}\right)\right)}{c} \\
&\quad - \frac{\left(2\left(b + \frac{b^2-2ac}{\sqrt{b^2-4ac}}\right)\right) \text{Subst}\left(\int \frac{1}{b+2c+\sqrt{b^2-4ac}+(b-2c+\sqrt{b^2-4ac})x^2} dx, x, \tan\left(\frac{x}{2}\right)\right)}{c} \\
&= \frac{x}{c} - \frac{2\left(b - \frac{b^2-2ac}{\sqrt{b^2-4ac}}\right) \arctan\left(\frac{\sqrt{b-2c-\sqrt{b^2-4ac}} \tan\left(\frac{x}{2}\right)}{\sqrt{b+2c-\sqrt{b^2-4ac}}}\right)}{c\sqrt{b-2c-\sqrt{b^2-4ac}}\sqrt{b+2c-\sqrt{b^2-4ac}}} \\
&\quad - \frac{2\left(b + \frac{b^2-2ac}{\sqrt{b^2-4ac}}\right) \arctan\left(\frac{\sqrt{b-2c+\sqrt{b^2-4ac}} \tan\left(\frac{x}{2}\right)}{\sqrt{b+2c+\sqrt{b^2-4ac}}}\right)}{c\sqrt{b-2c+\sqrt{b^2-4ac}}\sqrt{b+2c+\sqrt{b^2-4ac}}}
\end{aligned}$$

### Mathematica [A] (verified)

Time = 1.36 (sec) , antiderivative size = 264, normalized size of antiderivative = 1.04

$$\begin{aligned}
&\int \frac{\cos^2(x)}{a + b \cos(x) + c \cos^2(x)} dx \\
&= \frac{x + \frac{\sqrt{2}(b^2-2ac+b\sqrt{b^2-4ac}) \operatorname{arctanh}\left(\frac{(b-2c+\sqrt{b^2-4ac}) \tan\left(\frac{x}{2}\right)}{\sqrt{-2b^2+4c(a+c)-2b\sqrt{b^2-4ac}}}\right)}{\sqrt{b^2-4ac}\sqrt{-b^2+2c(a+c)-b\sqrt{b^2-4ac}}} - \frac{\sqrt{2}(-b^2+2ac+b\sqrt{b^2-4ac}) \operatorname{arctanh}\left(\frac{(-b+2c+\sqrt{b^2-4ac}) \tan\left(\frac{x}{2}\right)}{\sqrt{-2b^2+4c(a+c)+2b\sqrt{b^2-4ac}}}\right)}{\sqrt{b^2-4ac}\sqrt{-b^2+2c(a+c)+b\sqrt{b^2-4ac}}}}{c}
\end{aligned}$$

[In] Integrate[Cos[x]^2/(a + b\*Cos[x] + c\*Cos[x]^2), x]

[Out] (x + (Sqrt[2]\*(b^2 - 2\*a\*c + b\*Sqrt[b^2 - 4\*a\*c])\*ArcTanh[((b - 2\*c + Sqrt[b^2 - 4\*a\*c])\*Tan[x/2])/Sqrt[-2\*b^2 + 4\*c\*(a + c) - 2\*b\*Sqrt[b^2 - 4\*a\*c]])]/(Sqrt[b^2 - 4\*a\*c]\*Sqrt[-b^2 + 2\*c\*(a + c) - b\*Sqrt[b^2 - 4\*a\*c]]) - (Sqrt[2]\*(-b^2 + 2\*a\*c + b\*Sqrt[b^2 - 4\*a\*c])\*ArcTanh[((-b + 2\*c + Sqrt[b^2 - 4\*a\*c])\*Tan[x/2])/Sqrt[-2\*b^2 + 4\*c\*(a + c) + 2\*b\*Sqrt[b^2 - 4\*a\*c]])]/(Sqrt[b^2 - 4\*a\*c]\*Sqrt[-b^2 + 2\*c\*(a + c) + b\*Sqrt[b^2 - 4\*a\*c]]))/c

### Maple [A] (verified)

Time = 2.20 (sec) , antiderivative size = 261, normalized size of antiderivative = 1.02

method	result
default	$2(a-b+c) \left( \frac{(-a\sqrt{-4ac+b^2}+b\sqrt{-4ac+b^2}-ab-2ac+b^2) \operatorname{arctanh}\left(\frac{(-a+b-c)\tan\left(\frac{x}{2}\right)}{\sqrt{(\sqrt{-4ac+b^2}-a+c)(a-b+c)}}\right)}{2\sqrt{-4ac+b^2}(a-b+c)\sqrt{(\sqrt{-4ac+b^2}-a+c)(a-b+c)}} \right) + \frac{(-a\sqrt{-4ac+b^2}+b\sqrt{-4ac+b^2}+ab+2ac-b^2) \operatorname{arctanh}\left(\frac{(-a+b-c)\tan\left(\frac{x}{2}\right)}{\sqrt{(\sqrt{-4ac+b^2}-a+c)(a-b+c)}}\right)}{2\sqrt{-4ac+b^2}(a-b+c)\sqrt{(\sqrt{-4ac+b^2}-a+c)(a-b+c)}} \right)$
risch	Expression too large to display

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

[Out] 
$$\frac{2/c*(a-b+c)*(1/2*(-a*(-4*a*c+b^2)^(1/2)+b*(-4*a*c+b^2)^(1/2)-a*b-2*a*c+b^2)/(-4*a*c+b^2)^(1/2)/(a-b+c)/((( -4*a*c+b^2)^(1/2)-a+c)*(a-b+c))^(1/2)*\operatorname{arctanh}((-a+b-c)*\tan(1/2*x)/((( -4*a*c+b^2)^(1/2)-a+c)*(a-b+c))^(1/2))+1/2*(-a*(-4*a*c+b^2)^(1/2)+b*(-4*a*c+b^2)^(1/2)+a*b+2*a*c-b^2)/(-4*a*c+b^2)^(1/2)/(a-b+c)/((( -4*a*c+b^2)^(1/2)+a-c)*(a-b+c))^(1/2)*\operatorname{arctanh}((a-b+c)*\tan(1/2*x)/((( -4*a*c+b^2)^(1/2)+a-c)*(a-b+c))^(1/2)))+2/c*\operatorname{arctan}(\tan(1/2*x))}{c}$$

## Fricas [B] (verification not implemented)

Leaf count of result is larger than twice the leaf count of optimal. 4983 vs.  $2(215) = 430$ .

Time = 1.06 (sec) , antiderivative size = 4983, normalized size of antiderivative = 19.54

$$\int \frac{\cos^2(x)}{a + b \cos(x) + c \cos^2(x)} dx = \text{Too large to display}$$

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

[Out] 
$$\begin{aligned} & -1/4*(\sqrt{2}*c*\sqrt{(a^2*b^2 - b^4 - 2*a^2*c^2 - 2*(a^3 - 2*a*b^2)*c - (4*a*c^5 + (8*a^2 - b^2)*c^4 + 2*(2*a^3 - 3*a*b^2)*c^3 - (a^2*b^2 - b^4)*c^2)*\sqrt{-(a^4*b^2 - 2*a^2*b^4 + b^6 + 4*a^2*b^2*c^2 + 4*(a^3*b^2 - a*b^4)*c}})/(4*a*c^9 + (16*a^2 - b^2)*c^8 + 12*(2*a^3 - a*b^2)*c^7 + 2*(8*a^4 - 11*a^2*b^2 + b^4)*c^6 + 4*(a^5 - 3*a^3*b^2 + 2*a*b^4)*c^5 - (a^4*b^2 - 2*a^2*b^4 + b^6)*c^4)))/(4*a*c^5 + (8*a^2 - b^2)*c^4 + 2*(2*a^3 - 3*a*b^2)*c^3 - (a^2*b^2 - b^4)*c^2))*\log(4*a^3*b*c^2 - (4*a^3*c^5 + (8*a^4 - a^2*b^2)*c^4 + 2*(2*a^5 - 3*a^3*b^2)*c^3 - (a^4*b^2 - a^2*b^4)*c^2)*\sqrt{-(a^4*b^2 - 2*a^2*b^4 + b^6 + 4*a^2*b^2*c^2 + 4*(a^3*b^2 - a*b^4)*c}})/(4*a*c^9 + (16*a^2 - b^2)*c^8 + 12*(2*a^3 - a*b^2)*c^7 + 2*(8*a^4 - 11*a^2*b^2 + b^4)*c^6 + 4*(a^5 - 3*a^3*b^2 + 2*a*b^4)*c^5 - (a^4*b^2 - 2*a^2*b^4 + b^6)*c^4))*\cos(x) + 2*(a^4*b - a^2*b^3)*c + 1/2*\sqrt{2}*((8*a^2*c^7 + 6*(4*a^3 - a*b^2)*c^6 + (24*a^4 - 22*a^2*b^2 + b^4)*c^5 + 2*(4*a^5 - 9*a^3*b^2 + 4*a*b^4)*c^4 - (2*a^4*b^2 - 3*a^2*b^4 + b^6)*c^3)*\sqrt{-(a^4*b^2 - 2*a^2*b^4 + b^6 + 4*a^2*b^2*c^2 + 4*(a^3*b^2 - a*b^4)*c}})/(4*a*c^9 + (16*a^2 - b^2)*c^8 + 12*(2*a^3 - a*b^2)*c^7 + 2*(8*a^4 - 11*a^2*b^2 + b^4)*c^6 + 4*(a^5 - 3*a^3*b^2 + 2*a*b^4)*c^5 - (a^4*b^2 - 2*a^2*b^4 + b^6)*c^4))*\sin(x) + (8*a^2*b^2*c^3 + 2*(2*a^3*b^2 \end{aligned}$$

$$\begin{aligned}
& - 3*a*b^4)*c^2 - (a^2*b^4 - b^6)*c)*\sin(x))*\sqrt{(a^2*b^2 - b^4 - 2*a^2*c^2} \\
& - 2*(a^3 - 2*a*b^2)*c - (4*a*c^5 + (8*a^2 - b^2)*c^4 + 2*(2*a^3 - 3*a*b^2) \\
& *c^3 - (a^2*b^2 - b^4)*c^2))*\sqrt{-(a^4*b^2 - 2*a^2*b^4 + b^6 + 4*a^2*b^2*c^2} \\
& + 4*(a^3*b^2 - a*b^4)*c)/(4*a*c^9 + (16*a^2 - b^2)*c^8 + 12*(2*a^3 - a*b^2) \\
& *c^7 + 2*(8*a^4 - 11*a^2*b^2 + b^4)*c^6 + 4*(a^5 - 3*a^3*b^2 + 2*a*b^4)*c \\
& ^5 - (a^4*b^2 - 2*a^2*b^4 + b^6)*c^4)))/(4*a*c^5 + (8*a^2 - b^2)*c^4 + 2*(2 \\
& *a^3 - 3*a*b^2)*c^3 - (a^2*b^2 - b^4)*c^2)) + (a^4*b^2 - a^2*b^4 + 2*a^3*b^ \\
& 2*c)*\cos(x)) - \sqrt{2}*c*\sqrt{(a^2*b^2 - b^4 - 2*a^2*c^2 - 2*(a^3 - 2*a*b^2} \\
& )*c - (4*a*c^5 + (8*a^2 - b^2)*c^4 + 2*(2*a^3 - 3*a*b^2)*c^3 - (a^2*b^2 - b \\
& ^4)*c^2))*\sqrt{-(a^4*b^2 - 2*a^2*b^4 + b^6 + 4*a^2*b^2*c^2 + 4*(a^3*b^2 - a* \\
& b^4)*c)/(4*a*c^9 + (16*a^2 - b^2)*c^8 + 12*(2*a^3 - a*b^2)*c^7 + 2*(8*a^4 - \\
& 11*a^2*b^2 + b^4)*c^6 + 4*(a^5 - 3*a^3*b^2 + 2*a*b^4)*c^5 - (a^4*b^2 - 2*a \\
& ^2*b^4 + b^6)*c^4)))/(4*a*c^5 + (8*a^2 - b^2)*c^4 + 2*(2*a^3 - 3*a*b^2)*c^3} \\
& - (a^2*b^2 - b^4)*c^2))*\log(4*a^3*b*c^2 - (4*a^3*c^5 + (8*a^4 - a^2*b^2)*c \\
& ^4 + 2*(2*a^5 - 3*a^3*b^2)*c^3 - (a^4*b^2 - a^2*b^4)*c^2))*\sqrt{-(a^4*b^2 -} \\
& 2*a^2*b^4 + b^6 + 4*a^2*b^2*c^2 + 4*(a^3*b^2 - a*b^4)*c)/(4*a*c^9 + (16*a^2} \\
& - b^2)*c^8 + 12*(2*a^3 - a*b^2)*c^7 + 2*(8*a^4 - 11*a^2*b^2 + b^4)*c^6 + 4 \\
& *(a^5 - 3*a^3*b^2 + 2*a*b^4)*c^5 - (a^4*b^2 - 2*a^2*b^4 + b^6)*c^4))*\cos(x) \\
& + 2*(a^4*b - a^2*b^3)*c - 1/2*\sqrt{2}*((8*a^2*c^7 + 6*(4*a^3 - a*b^2)*c^6} \\
& + (24*a^4 - 22*a^2*b^2 + b^4)*c^5 + 2*(4*a^5 - 9*a^3*b^2 + 4*a*b^4)*c^4 - ( \\
& 2*a^4*b^2 - 3*a^2*b^4 + b^6)*c^3))*\sqrt{-(a^4*b^2 - 2*a^2*b^4 + b^6 + 4*a^2*} \\
& b^2*c^2 + 4*(a^3*b^2 - a*b^4)*c)/(4*a*c^9 + (16*a^2 - b^2)*c^8 + 12*(2*a^3} \\
& - a*b^2)*c^7 + 2*(8*a^4 - 11*a^2*b^2 + b^4)*c^6 + 4*(a^5 - 3*a^3*b^2 + 2*a* \\
& b^4)*c^5 - (a^4*b^2 - 2*a^2*b^4 + b^6)*c^4))*\sin(x) + (8*a^2*b^2*c^3 + 2*(2 \\
& *a^3*b^2 - 3*a*b^4)*c^2 - (a^2*b^4 - b^6)*c)*\sin(x))*\sqrt{(a^2*b^2 - b^4 -} \\
& 2*a^2*c^2 - 2*(a^3 - 2*a*b^2)*c - (4*a*c^5 + (8*a^2 - b^2)*c^4 + 2*(2*a^3 -} \\
& 3*a*b^2)*c^3 - (a^2*b^2 - b^4)*c^2))*\sqrt{-(a^4*b^2 - 2*a^2*b^4 + b^6 + 4*a} \\
& ^2*b^2*c^2 + 4*(a^3*b^2 - a*b^4)*c)/(4*a*c^9 + (16*a^2 - b^2)*c^8 + 12*(2*a} \\
& ^3 - a*b^2)*c^7 + 2*(8*a^4 - 11*a^2*b^2 + b^4)*c^6 + 4*(a^5 - 3*a^3*b^2 + 2 \\
& *a*b^4)*c^5 - (a^4*b^2 - 2*a^2*b^4 + b^6)*c^4)))/(4*a*c^5 + (8*a^2 - b^2)*c \\
& ^4 + 2*(2*a^3 - 3*a*b^2)*c^3 - (a^2*b^2 - b^4)*c^2)) + (a^4*b^2 - a^2*b^4 +} \\
& 2*a^3*b^2*c)*\cos(x)) + \sqrt{2}*c*\sqrt{(a^2*b^2 - b^4 - 2*a^2*c^2 - 2*(a^3} \\
& - 2*a*b^2)*c + (4*a*c^5 + (8*a^2 - b^2)*c^4 + 2*(2*a^3 - 3*a*b^2)*c^3 - (a^ \\
& 2*b^2 - b^4)*c^2))*\sqrt{-(a^4*b^2 - 2*a^2*b^4 + b^6 + 4*a^2*b^2*c^2 + 4*(a^3} \\
& *b^2 - a*b^4)*c)/(4*a*c^9 + (16*a^2 - b^2)*c^8 + 12*(2*a^3 - a*b^2)*c^7 + 2} \\
& *(8*a^4 - 11*a^2*b^2 + b^4)*c^6 + 4*(a^5 - 3*a^3*b^2 + 2*a*b^4)*c^5 - (a^4* \\
& b^2 - 2*a^2*b^4 + b^6)*c^4)))/(4*a*c^5 + (8*a^2 - b^2)*c^4 + 2*(2*a^3 - 3*a} \\
& *b^2)*c^3 - (a^2*b^2 - b^4)*c^2))*\log(-4*a^3*b*c^2 - (4*a^3*c^5 + (8*a^4 -} \\
& a^2*b^2)*c^4 + 2*(2*a^5 - 3*a^3*b^2)*c^3 - (a^4*b^2 - a^2*b^4)*c^2))*\sqrt{-(} \\
& a^4*b^2 - 2*a^2*b^4 + b^6 + 4*a^2*b^2*c^2 + 4*(a^3*b^2 - a*b^4)*c)/(4*a*c^9} \\
& + (16*a^2 - b^2)*c^8 + 12*(2*a^3 - a*b^2)*c^7 + 2*(8*a^4 - 11*a^2*b^2 + b^ \\
& 4)*c^6 + 4*(a^5 - 3*a^3*b^2 + 2*a*b^4)*c^5 - (a^4*b^2 - 2*a^2*b^4 + b^6)*c \\
& ^4))*\cos(x) - 2*(a^4*b - a^2*b^3)*c + 1/2*\sqrt{2}*((8*a^2*c^7 + 6*(4*a^3 - a} \\
& *b^2)*c^6 + (24*a^4 - 22*a^2*b^2 + b^4)*c^5 + 2*(4*a^5 - 9*a^3*b^2 + 4*a*b^ \\
& 4)*c^4 - (2*a^4*b^2 - 3*a^2*b^4 + b^6)*c^3))*\sqrt{-(a^4*b^2 - 2*a^2*b^4 + b^
\end{aligned}$$

$$\begin{aligned}
& 6 + 4a^2b^2c^2 + 4(a^3b^2 - ab^4)c / (4ac^9 + (16a^2 - b^2)c^8 + \\
& 12(2a^3 - ab^2)c^7 + 2(8a^4 - 11a^2b^2 + b^4)c^6 + 4(a^5 - 3a^3b^2 + \\
& b^2 + 2ab^4)c^5 - (a^4b^2 - 2a^2b^4 + b^6)c^4) \sin(x) - (8a^2b^2c^3 + \\
& 2(2a^3b^2 - 3ab^4)c^2 - (a^2b^4 - b^6)c) \sin(x) \sqrt{(a^2b^2 - b^4 - \\
& 2a^2c^2 - 2(a^3 - 2ab^2)c + (4ac^5 + (8a^2 - b^2)c^4 + \\
& 2(2a^3 - 3ab^2)c^3 - (a^2b^2 - b^4)c^2) \sqrt{-(a^4b^2 - 2a^2b^4 + \\
& b^6 + 4a^2b^2c^2 + 4(a^3b^2 - ab^4)c) / (4ac^9 + (16a^2 - b^2)c^8 + \\
& 12(2a^3 - ab^2)c^7 + 2(8a^4 - 11a^2b^2 + b^4)c^6 + 4(a^5 - 3a^3b^2 + \\
& 2ab^4)c^5 - (a^4b^2 - 2a^2b^4 + b^6)c^4)} / (4ac^5 + (8a^2 - b^2)c^4 + \\
& 2(2a^3 - 3ab^2)c^3 - (a^2b^2 - b^4)c^2)) - (a^4b^2 - a^2b^4 + \\
& 2a^3b^2c) \cos(x) - \sqrt{2}c \sqrt{(a^2b^2 - b^4 - 2a^2c^2 - 2(a^3 - 2ab^2)c + \\
& (4ac^5 + (8a^2 - b^2)c^4 + 2(2a^3 - 3ab^2)c^3 - (a^2b^2 - b^4)c^2) \sqrt{-(a^4b^2 - \\
& 2a^2b^4 + b^6 + 4a^2b^2c^2 + 4(a^3b^2 - ab^4)c) / (4ac^9 + (16a^2 - b^2)c^8 + \\
& 12(2a^3 - ab^2)c^7 + 2(8a^4 - 11a^2b^2 + b^4)c^6 + 4(a^5 - 3a^3b^2 + \\
& 2ab^4)c^5 - (a^4b^2 - 2a^2b^4 + b^6)c^4)} / (4ac^5 + (8a^2 - b^2)c^4 + \\
& 2(2a^3 - 3ab^2)c^3 - (a^2b^2 - b^4)c^2)) \log(-4a^3bc^2 - (4a^3c^5 + \\
& (8a^4 - a^2b^2)c^4 + 2(2a^5 - 3a^3b^2)c^3 - (a^4b^2 - a^2b^4)c^2) \sqrt{-(a^4b^2 - \\
& 2a^2b^4 + b^6 + 4a^2b^2c^2 + 4(a^3b^2 - ab^4)c) / (4ac^9 + (16a^2 - b^2)c^8 + \\
& 12(2a^3 - ab^2)c^7 + 2(8a^4 - 11a^2b^2 + b^4)c^6 + 4(a^5 - 3a^3b^2 + \\
& 2ab^4)c^5 - (a^4b^2 - 2a^2b^4 + b^6)c^4)} \cos(x) - 2(a^4b - a^2b^3)c - \\
& 1/2 \sqrt{2} ((8a^2c^7 + 6(4a^3 - ab^2)c^6 + (24a^4 - 22a^2b^2 + b^4)c^5 + 2(4a^5 - 9a^3b^2 + \\
& 4ab^4)c^4 - (2a^4b^2 - 3a^2b^4 + b^6)c^3) \sqrt{-(a^4b^2 - 2a^2b^4 + b^6 + \\
& 4a^2b^2c^2 + 4(a^3b^2 - ab^4)c) / (4ac^9 + (16a^2 - b^2)c^8 + 12(2a^3 - ab^2)c^7 + \\
& 2(8a^4 - 11a^2b^2 + b^4)c^6 + 4(a^5 - 3a^3b^2 + 2ab^4)c^5 - (a^4b^2 - 2a^2b^4 + \\
& b^6)c^4)} \sin(x) - (8a^2b^2c^3 + 2(2a^3b^2 - 3ab^4)c^2 - (a^2b^4 - b^6)c) \sin(x) \sqrt{ \\
& (a^2b^2 - b^4 - 2a^2c^2 - 2(a^3 - 2ab^2)c + (4ac^5 + (8a^2 - b^2)c^4 + \\
& 2(2a^3 - 3ab^2)c^3 - (a^2b^2 - b^4)c^2) \sqrt{-(a^4b^2 - 2a^2b^4 + b^6 + \\
& 4a^2b^2c^2 + 4(a^3b^2 - ab^4)c) / (4ac^9 + (16a^2 - b^2)c^8 + 12(2a^3 - ab^2)c^7 + \\
& 2(8a^4 - 11a^2b^2 + b^4)c^6 + 4(a^5 - 3a^3b^2 + 2ab^4)c^5 - (a^4b^2 - 2a^2b^4 + \\
& b^6)c^4)} / (4ac^5 + (8a^2 - b^2)c^4 + 2(2a^3 - 3ab^2)c^3 - (a^2b^2 - b^4)c^2)) - \\
& (a^4b^2 - a^2b^4 + 2a^3b^2c) \cos(x) - 4x) / c
\end{aligned}$$

## Sympy [F(-1)]

Timed out.

$$\int \frac{\cos^2(x)}{a + b \cos(x) + c \cos^2(x)} dx = \text{Timed out}$$

[In] integrate(cos(x)\*\*2/(a+b\*cos(x)+c\*cos(x)\*\*2),x)

[Out] Timed out

## Maxima [F]

$$\int \frac{\cos^2(x)}{a + b \cos(x) + c \cos^2(x)} dx = \int \frac{\cos(x)^2}{c \cos(x)^2 + b \cos(x) + a} dx$$

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

[Out]  $-(c \int (2*(2*b^2*\cos(3*x))^2 + 2*b^2*\cos(x)^2 + 2*b^2*\sin(3*x)^2 + 2*b^2*\sin(x)^2 + 4*(2*a^2 + a*c)*\cos(2*x)^2 + b*c*\cos(x) + 4*(2*a^2 + a*c)*\sin(2*x)^2 + 2*(4*a*b + b*c)*\sin(2*x)*\sin(x) + (b*c*\cos(3*x) + 2*a*c*\cos(2*x) + b*c*\cos(x))*\cos(4*x) + (4*b^2*\cos(x) + b*c + 2*(4*a*b + b*c)*\cos(2*x))*\cos(3*x) + 2*(a*c + (4*a*b + b*c)*\cos(x))*\cos(2*x) + (b*c*\sin(3*x) + 2*a*c*\sin(2*x) + b*c*\sin(x))*\sin(4*x) + 2*(2*b^2*\sin(x) + (4*a*b + b*c)*\sin(2*x))*\sin(3*x)) / (c^3*\cos(4*x)^2 + 4*b^2*c*\cos(3*x)^2 + 4*b^2*c*\cos(x)^2 + c^3*\sin(4*x)^2 + 4*b^2*c*\sin(3*x)^2 + 4*b^2*c*\sin(x)^2 + 4*b*c^2*\cos(x) + c^3 + 4*(4*a^2*c + 4*a*c^2 + c^3)*\cos(2*x)^2 + 4*(4*a^2*c + 4*a*c^2 + c^3)*\sin(2*x)^2 + 8*(2*a*b*c + b*c^2)*\sin(2*x)*\sin(x) + 2*(2*b*c^2*\cos(3*x) + 2*b*c^2*\cos(x) + c^3 + 2*(2*a*c^2 + c^3)*\cos(2*x))*\cos(4*x) + 4*(2*b^2*c*\cos(x) + b*c^2 + 2*(2*a*b*c + b*c^2)*\cos(2*x))*\cos(3*x) + 4*(2*a*c^2 + c^3 + 2*(2*a*b*c + b*c^2)*\cos(x))*\cos(2*x) + 4*(b*c^2*\sin(3*x) + b*c^2*\sin(x) + (2*a*c^2 + c^3)*\sin(2*x))*\sin(4*x) + 8*(b^2*c*\sin(x) + (2*a*b*c + b*c^2)*\sin(2*x))*\sin(3*x)), x) - x)/c$

## Giac [B] (verification not implemented)

Leaf count of result is larger than twice the leaf count of optimal. 9030 vs. 2(215) = 430.

Time = 2.16 (sec) , antiderivative size = 9030, normalized size of antiderivative = 35.41

$$\int \frac{\cos^2(x)}{a + b \cos(x) + c \cos^2(x)} dx = \text{Too large to display}$$

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

[Out]  $x/c + ((2*a^3*b^4 - 6*a^2*b^5 + 6*a*b^6 - 2*b^7 - 16*a^4*b^2*c + 48*a^3*b^3*c - 44*a^2*b^4*c + 8*a*b^5*c + 4*b^6*c + 32*a^5*c^2 - 96*a^4*b*c^2 + 64*a^3*b^2*c^2 + 32*a^2*b^3*c^2 - 30*a*b^4*c^2 - 2*b^5*c^2 + 64*a^4*c^3 - 128*a^3*b*c^3 + 48*a^2*b^2*c^3 + 16*a*b^3*c^3 + 32*a^3*c^4 - 32*a^2*b*c^4 + 3*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}}*(a - b + c))*\sqrt{b^2 - 4*a*c}*a^3*b^2 - 2*(b^2 - 4*a*c)*a^3*b^2 - 5*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}}*(a - b + c))*\sqrt{b^2 - 4*a*c}*a^2*b^3 + 6*(b^2 - 4*a*c)*a^2*b^3 - 3*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}}*(a - b + c))*\sqrt{b^2 - 4*a*c}*a*b^4 - 6*(b^2 - 4*a*c)*a*b^4 + 5*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}}*(a - b + c))*\sqrt{b^2 - 4*a*c}*b^5 + 2*(b^2 - 4*a*c)*b^5 - 12*$

$$\begin{aligned}
& \sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c) \sqrt{b^2 - 4ac} \\
& c) a^4 c + 8(b^2 - 4ac) a^4 c + 20 \sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}} \\
& (a - b + c) \sqrt{b^2 - 4ac} a^3 b c - 24(b^2 - 4ac) a^3 b c \\
& + 26 \sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c) \sqrt{b^2 - 4ac} \\
& a^2 b^2 c + 20(b^2 - 4ac) a^2 b^2 c - 28 \sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}} \\
& (a - b + c) \sqrt{b^2 - 4ac} a b^3 c - 6 \sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}} \\
& (a - b + c) \sqrt{b^2 - 4ac} b^4 c - 4(b^2 - 4ac) b^4 c - 56 \sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}} \\
& c)(a - b + c) \sqrt{b^2 - 4ac} a^3 c^2 + 16(b^2 - 4ac) a^3 c^2 + 32 \sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}} \\
& (a - b + c) \sqrt{b^2 - 4ac} a^2 b c^2 - 32(b^2 - 4ac) a^2 b c^2 + 19 \sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}} \\
& (a - b + c) \sqrt{b^2 - 4ac} a b^2 c^2 + 14(b^2 - 4ac) a b^2 c^2 + 5 \sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}} \\
& (a - b + c) \sqrt{b^2 - 4ac} b^3 c^2 + 2(b^2 - 4ac) b^3 c^2 + 20 \sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}} \\
& (a - b + c) \sqrt{b^2 - 4ac} a^2 c^3 + 8(b^2 - 4ac) a^2 c^3 - 20 \sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}} \\
& (a - b + c) \sqrt{b^2 - 4ac} a b c^3 - 8(b^2 - 4ac) a b c^3) c^2 \text{abs}(a - b + c) - (4a^3 b^4 c - 4a^2 b^5 c - 4a b^6 c + 4b^7 c - 32a^4 b^2 c^2 \\
& + 32a^3 b^3 c^2 + 40a^2 b^4 c^2 - 32a b^5 c^2 - 8b^6 c^2 + 64a^5 c^3 - 64a^4 b b c^3 - 128a^3 b^2 c^3 + 64a^2 b^3 c^3 + 68a b^4 c^3 + 4b^5 c^3 \\
& + 128a^4 c^4 - 160a^2 b^2 c^4 - 32a b^3 c^4 + 64a^3 c^5 + 64a^2 b b c^5 + 3 \sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c) a^4 b^2 c \\
& - 2 \sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c) a^3 b^3 c - 8 \sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c) a^2 b^4 c + \\
& 2 \sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c) a b^5 c + 5 \sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c) b^6 c - 12 \sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}} \\
& (a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac})(a - b + c) a^5 c^2 + 8 \sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c) a^4 b c^2 + 49 \sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}} \\
& (a - b + c) a^3 b^2 c^2 - \sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c) a^2 b^3 c^2 - 41 \sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c) a b^4 c^2 - 11 \sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}} \\
& (a - b + c) b^5 c^2 - 68 \sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c) a^4 c^3 - 28 \sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c) a^3 b c^3 + 93 \sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}} \\
& (a - b + c) a^2 b^2 c^3 + 64 \sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c) a b^3 c^3 + 11 \sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c) b^4 c^3 - 36 \sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}} \\
& (a - b + c) a^3 c^4 - 80 \sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c) a^2 b c^4 - 49 \sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c) a b^2 c^4 - 5 \sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}} \\
& (a - b + c) b^3 c^4 + 20 \sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c) a^2 c^5 + 20 \sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c) a b c^5 - 4(b^2 - 4ac) a^3 b^2 c \\
& + 4(b^2 - 4ac) a^2 b^3 c + 4(b^2 - 4ac) a b^4 c - 4(b^2 - 4ac) b^5 c + 16(b^2 - 4ac) a^4 c^2 - 16(b^2 - 4ac) a^3 b c^2 - 24(b^2 -
\end{aligned}$$

$$\begin{aligned}
& 4*a*c)*a^2*b^2*c^2 + 16*(b^2 - 4*a*c)*a*b^3*c^2 + 8*(b^2 - 4*a*c)*b^4*c^2 + \\
& 32*(b^2 - 4*a*c)*a^3*c^3 - 36*(b^2 - 4*a*c)*a*b^2*c^3 - 4*(b^2 - 4*a*c)*b^3*c^3 + 16*(b^2 - 4*a*c)*a^2*c^4 + 16*(b^2 - 4*a*c)*a*b*c^4)*abs(a - b + c) \\
& *abs(c) + (2*a^4*b^3*c^2 - 6*a^3*b^4*c^2 + 6*a^2*b^5*c^2 - 2*a*b^6*c^2 - 8* \\
& a^5*b*c^3 + 28*a^4*b^2*c^3 - 30*a^3*b^3*c^3 + 10*a^2*b^4*c^3 - 2*a*b^5*c^3 \\
& + 2*b^6*c^3 - 16*a^5*c^4 + 24*a^4*b*c^4 - 4*a^3*b^2*c^4 + 6*a^2*b^3*c^4 - 6 \\
& *a*b^4*c^4 - 4*b^5*c^4 - 16*a^4*c^5 + 8*a^3*b*c^5 - 12*a^2*b^2*c^5 + 22*a*b^3*c^5 + 2*b^4*c^5 + 16*a^3*c^6 - 24*a^2*b*c^6 - 12*a*b^2*c^6 + 16*a^2*c^7 \\
& + 3*sqrt(a^2 - a*b + b*c - c^2 + sqrt(b^2 - 4*a*c))*(a - b + c))*sqrt(b^2 - \\
& 4*a*c)*a^4*b*c^2 - 2*(b^2 - 4*a*c)*a^4*b*c^2 - 5*sqrt(a^2 - a*b + b*c - c^2 \\
& + sqrt(b^2 - 4*a*c))*(a - b + c))*sqrt(b^2 - 4*a*c)*a^3*b^2*c^2 + 6*(b^2 - \\
& 4*a*c)*a^3*b^2*c^2 - 3*sqrt(a^2 - a*b + b*c - c^2 + sqrt(b^2 - 4*a*c))*(a - \\
& b + c))*sqrt(b^2 - 4*a*c)*a^2*b^3*c^2 - 6*(b^2 - 4*a*c)*a^2*b^3*c^2 + 5*sqrt \\
& (a^2 - a*b + b*c - c^2 + sqrt(b^2 - 4*a*c))*(a - b + c))*sqrt(b^2 - 4*a*c)* \\
& a*b^4*c^2 + 2*(b^2 - 4*a*c)*a*b^4*c^2 + 6*sqrt(a^2 - a*b + b*c - c^2 + sqrt \\
& (b^2 - 4*a*c))*(a - b + c))*sqrt(b^2 - 4*a*c)*a^4*c^3 - 4*(b^2 - 4*a*c)*a^4* \\
& c^3 + 7*sqrt(a^2 - a*b + b*c - c^2 + sqrt(b^2 - 4*a*c))*(a - b + c))*sqrt(b^2 \\
& - 4*a*c)*a^3*b*c^3 + 6*(b^2 - 4*a*c)*a^3*b*c^3 - 13*sqrt(a^2 - a*b + b*c \\
& - c^2 + sqrt(b^2 - 4*a*c))*(a - b + c))*sqrt(b^2 - 4*a*c)*a^2*b^2*c^3 - 2*(b \\
& ^2 - 4*a*c)*a^2*b^2*c^3 - 3*sqrt(a^2 - a*b + b*c - c^2 + sqrt(b^2 - 4*a*c))* \\
& (a - b + c))*sqrt(b^2 - 4*a*c)*a*b^3*c^3 + 2*(b^2 - 4*a*c)*a*b^3*c^3 - 5*sqrt \\
& (a^2 - a*b + b*c - c^2 + sqrt(b^2 - 4*a*c))*(a - b + c))*sqrt(b^2 - 4*a*c) \\
& *b^4*c^3 - 2*(b^2 - 4*a*c)*b^4*c^3 + 22*sqrt(a^2 - a*b + b*c - c^2 + sqrt(b \\
& ^2 - 4*a*c))*(a - b + c))*sqrt(b^2 - 4*a*c)*a^3*c^4 - 4*(b^2 - 4*a*c)*a^3*c^4 \\
& - 3*sqrt(a^2 - a*b + b*c - c^2 + sqrt(b^2 - 4*a*c))*(a - b + c))*sqrt(b^2 \\
& - 4*a*c)*a^2*b*c^4 + 2*(b^2 - 4*a*c)*a^2*b*c^4 + 23*sqrt(a^2 - a*b + b*c - \\
& c^2 + sqrt(b^2 - 4*a*c))*(a - b + c))*sqrt(b^2 - 4*a*c)*a*b^2*c^4 - 2*(b^2 - \\
& 4*a*c)*a*b^2*c^4 + 6*sqrt(a^2 - a*b + b*c - c^2 + sqrt(b^2 - 4*a*c))*(a - b \\
& + c))*sqrt(b^2 - 4*a*c)*b^3*c^4 + 4*(b^2 - 4*a*c)*b^3*c^4 - 38*sqrt(a^2 - \\
& a*b + b*c - c^2 + sqrt(b^2 - 4*a*c))*(a - b + c))*sqrt(b^2 - 4*a*c)*a^2*c^5 \\
& + 4*(b^2 - 4*a*c)*a^2*c^5 - 7*sqrt(a^2 - a*b + b*c - c^2 + sqrt(b^2 - 4*a*c) \\
& )*(a - b + c))*sqrt(b^2 - 4*a*c)*a*b*c^5 - 6*(b^2 - 4*a*c)*a*b*c^5 - 5*sqrt \\
& (a^2 - a*b + b*c - c^2 + sqrt(b^2 - 4*a*c))*(a - b + c))*sqrt(b^2 - 4*a*c)*b \\
& ^2*c^5 - 2*(b^2 - 4*a*c)*b^2*c^5 + 10*sqrt(a^2 - a*b + b*c - c^2 + sqrt(b^2 \\
& - 4*a*c))*(a - b + c))*sqrt(b^2 - 4*a*c)*a*c^6 + 4*(b^2 - 4*a*c)*a*c^6)*abs \\
& (a - b + c))*(pi*floor(1/2*x/pi + 1/2) + arctan(2*sqrt(1/2)*tan(1/2*x)/sqrt \\
& ((2*a*c - 2*c^2 + sqrt(-4*(a*c + b*c + c^2))*(a*c - b*c + c^2) + 4*(a*c - c^2)^2))/(a*c - b*c + c^2)))/((3*a^6*b^2*c^2 - 8*a^5*b^3*c^2 - a^4*b^4*c^2 + \\
& 16*a^3*b^5*c^2 - 7*a^2*b^6*c^2 - 8*a*b^7*c^2 + 5*b^8*c^2 - 12*a^7*c^3 + 32 \\
& *a^6*b*c^3 + 30*a^5*b^2*c^3 - 112*a^4*b^3*c^3 + 8*a^3*b^4*c^3 + 96*a^2*b^5* \\
& c^3 - 26*a*b^6*c^3 - 16*b^7*c^3 - 104*a^6*c^4 + 192*a^5*b*c^4 + 149*a^4*b^2 \\
& *c^4 - 336*a^3*b^3*c^4 - 30*a^2*b^4*c^4 + 112*a*b^5*c^4 + 17*b^6*c^4 - 276* \\
& a^5*c^5 + 320*a^4*b*c^5 + 292*a^3*b^2*c^5 - 224*a^2*b^3*c^5 - 120*a*b^4*c^5 \\
& - 304*a^4*c^6 + 128*a^3*b*c^6 + 237*a^2*b^2*c^6 + 24*a*b^3*c^6 - 17*b^4*c^6 \\
& - 116*a^3*c^7 - 96*a^2*b*c^7 + 62*a*b^2*c^7 + 16*b^3*c^7 + 24*a^2*c^8 - 6
\end{aligned}$$

$$\begin{aligned}
& 4*a*b*c^8 - 5*b^2*c^8 + 20*a*c^9)*abs(c)) - ((2*a^3*b^4 - 6*a^2*b^5 + 6*a*b^6 \\
& ^6 - 2*b^7 - 16*a^4*b^2*c + 48*a^3*b^3*c - 44*a^2*b^4*c + 8*a*b^5*c + 4*b^6 \\
& *c + 32*a^5*c^2 - 96*a^4*b*c^2 + 64*a^3*b^2*c^2 + 32*a^2*b^3*c^2 - 30*a*b^4 \\
& *c^2 - 2*b^5*c^2 + 64*a^4*c^3 - 128*a^3*b*c^3 + 48*a^2*b^2*c^3 + 16*a*b^3*c \\
& ^3 + 32*a^3*c^4 - 32*a^2*b*c^4 + 3*sqrt(a^2 - a*b + b*c - c^2 - sqrt(b^2 - \\
& 4*a*c))*(a - b + c))*sqrt(b^2 - 4*a*c)*a^3*b^2 - 2*(b^2 - 4*a*c)*a^3*b^2 - 5 \\
& *sqrt(a^2 - a*b + b*c - c^2 - sqrt(b^2 - 4*a*c))*(a - b + c))*sqrt(b^2 - 4*a \\
& *c)*a^2*b^3 + 6*(b^2 - 4*a*c)*a^2*b^3 - 3*sqrt(a^2 - a*b + b*c - c^2 - sqrt \\
& (b^2 - 4*a*c))*(a - b + c))*sqrt(b^2 - 4*a*c)*a*b^4 - 6*(b^2 - 4*a*c)*a*b^4 \\
& + 5*sqrt(a^2 - a*b + b*c - c^2 - sqrt(b^2 - 4*a*c))*(a - b + c))*sqrt(b^2 - \\
& 4*a*c)*b^5 + 2*(b^2 - 4*a*c)*b^5 - 12*sqrt(a^2 - a*b + b*c - c^2 - sqrt(b^2 \\
& - 4*a*c))*(a - b + c))*sqrt(b^2 - 4*a*c)*a^4*c + 8*(b^2 - 4*a*c)*a^4*c + 20 \\
& *sqrt(a^2 - a*b + b*c - c^2 - sqrt(b^2 - 4*a*c))*(a - b + c))*sqrt(b^2 - 4*a \\
& *c)*a^3*b*c - 24*(b^2 - 4*a*c)*a^3*b*c + 26*sqrt(a^2 - a*b + b*c - c^2 - sq \\
& rt(b^2 - 4*a*c))*(a - b + c))*sqrt(b^2 - 4*a*c)*a^2*b^2*c + 20*(b^2 - 4*a*c) \\
& *a^2*b^2*c - 28*sqrt(a^2 - a*b + b*c - c^2 - sqrt(b^2 - 4*a*c))*(a - b + c)) \\
& *sqrt(b^2 - 4*a*c)*a*b^3*c - 6*sqrt(a^2 - a*b + b*c - c^2 - sqrt(b^2 - 4*a* \\
& c))*(a - b + c))*sqrt(b^2 - 4*a*c)*b^4*c - 4*(b^2 - 4*a*c)*b^4*c - 56*sqrt(a \\
& ^2 - a*b + b*c - c^2 - sqrt(b^2 - 4*a*c))*(a - b + c))*sqrt(b^2 - 4*a*c)*a^3 \\
& *c^2 + 16*(b^2 - 4*a*c)*a^3*c^2 + 32*sqrt(a^2 - a*b + b*c - c^2 - sqrt(b^2 \\
& - 4*a*c))*(a - b + c))*sqrt(b^2 - 4*a*c)*a^2*b*c^2 - 32*(b^2 - 4*a*c)*a^2*b* \\
& c^2 + 19*sqrt(a^2 - a*b + b*c - c^2 - sqrt(b^2 - 4*a*c))*(a - b + c))*sqrt(b \\
& ^2 - 4*a*c)*a*b^2*c^2 + 14*(b^2 - 4*a*c)*a*b^2*c^2 + 5*sqrt(a^2 - a*b + b*c \\
& - c^2 - sqrt(b^2 - 4*a*c))*(a - b + c))*sqrt(b^2 - 4*a*c)*b^3*c^2 + 2*(b^2 \\
& - 4*a*c)*b^3*c^2 + 20*sqrt(a^2 - a*b + b*c - c^2 - sqrt(b^2 - 4*a*c))*(a - b \\
& + c))*sqrt(b^2 - 4*a*c)*a^2*c^3 + 8*(b^2 - 4*a*c)*a^2*c^3 - 20*sqrt(a^2 - \\
& a*b + b*c - c^2 - sqrt(b^2 - 4*a*c))*(a - b + c))*sqrt(b^2 - 4*a*c)*a*b*c^3 \\
& - 8*(b^2 - 4*a*c)*a*b*c^3)*c^2*abs(a - b + c) - (4*a^3*b^4*c - 4*a^2*b^5*c \\
& - 4*a*b^6*c + 4*b^7*c - 32*a^4*b^2*c^2 + 32*a^3*b^3*c^2 + 40*a^2*b^4*c^2 - \\
& 32*a*b^5*c^2 - 8*b^6*c^2 + 64*a^5*c^3 - 64*a^4*b*c^3 - 128*a^3*b^2*c^3 + 64 \\
& *a^2*b^3*c^3 + 68*a*b^4*c^3 + 4*b^5*c^3 + 128*a^4*c^4 - 160*a^2*b^2*c^4 - 3 \\
& 2*a*b^3*c^4 + 64*a^3*c^5 + 64*a^2*b*c^5 - 3*sqrt(a^2 - a*b + b*c - c^2 - sq \\
& rt(b^2 - 4*a*c))*(a - b + c))*a^4*b^2*c + 2*sqrt(a^2 - a*b + b*c - c^2 - sq \\
& rt(b^2 - 4*a*c))*(a - b + c))*a^3*b^3*c + 8*sqrt(a^2 - a*b + b*c - c^2 - sqrt \\
& (b^2 - 4*a*c))*(a - b + c))*a^2*b^4*c - 2*sqrt(a^2 - a*b + b*c - c^2 - sqrt( \\
& b^2 - 4*a*c))*(a - b + c))*a*b^5*c - 5*sqrt(a^2 - a*b + b*c - c^2 - sqrt(b^2 \\
& - 4*a*c))*(a - b + c))*b^6*c + 12*sqrt(a^2 - a*b + b*c - c^2 - sqrt(b^2 - 4 \\
& *a*c))*(a - b + c))*a^5*c^2 - 8*sqrt(a^2 - a*b + b*c - c^2 - sqrt(b^2 - 4*a* \\
& c))*(a - b + c))*a^4*b*c^2 - 49*sqrt(a^2 - a*b + b*c - c^2 - sqrt(b^2 - 4*a* \\
& c))*(a - b + c))*a^3*b^2*c^2 + sqrt(a^2 - a*b + b*c - c^2 - sqrt(b^2 - 4*a*c \\
& ))*(a - b + c))*a^2*b^3*c^2 + 41*sqrt(a^2 - a*b + b*c - c^2 - sqrt(b^2 - 4*a \\
& *c))*(a - b + c))*a*b^4*c^2 + 11*sqrt(a^2 - a*b + b*c - c^2 - sqrt(b^2 - 4*a \\
& *c))*(a - b + c))*b^5*c^2 + 68*sqrt(a^2 - a*b + b*c - c^2 - sqrt(b^2 - 4*a*c \\
& ))*(a - b + c))*a^4*c^3 + 28*sqrt(a^2 - a*b + b*c - c^2 - sqrt(b^2 - 4*a*c)* \\
& (a - b + c))*a^3*b*c^3 - 93*sqrt(a^2 - a*b + b*c - c^2 - sqrt(b^2 - 4*a*c))*
\end{aligned}$$



$$\begin{aligned}
& (a - b + c)) * a^2 * b^2 * c^3 - 64 * \sqrt{a^2 - a * b + b * c - c^2 - \sqrt{b^2 - 4 * a * c}} \\
& ) * (a - b + c)) * a * b^3 * c^3 - 11 * \sqrt{a^2 - a * b + b * c - c^2 - \sqrt{b^2 - 4 * a * c}} \\
& ) * (a - b + c)) * b^4 * c^3 + 36 * \sqrt{a^2 - a * b + b * c - c^2 - \sqrt{b^2 - 4 * a * c}} * \\
& (a - b + c)) * a^3 * c^4 + 80 * \sqrt{a^2 - a * b + b * c - c^2 - \sqrt{b^2 - 4 * a * c}} * (a \\
& - b + c)) * a^2 * b * c^4 + 49 * \sqrt{a^2 - a * b + b * c - c^2 - \sqrt{b^2 - 4 * a * c}} * (a \\
& - b + c)) * a * b^2 * c^4 + 5 * \sqrt{a^2 - a * b + b * c - c^2 - \sqrt{b^2 - 4 * a * c}} * (a \\
& - b + c)) * b^3 * c^4 - 20 * \sqrt{a^2 - a * b + b * c - c^2 - \sqrt{b^2 - 4 * a * c}} * (a - b \\
& + c)) * a^2 * c^5 - 20 * \sqrt{a^2 - a * b + b * c - c^2 - \sqrt{b^2 - 4 * a * c}} * (a - b \\
& + c)) * a * b * c^5 - 4 * (b^2 - 4 * a * c) * a^3 * b^2 * c + 4 * (b^2 - 4 * a * c) * a^2 * b^3 * c + 4 * ( \\
& b^2 - 4 * a * c) * a * b^4 * c - 4 * (b^2 - 4 * a * c) * b^5 * c + 16 * (b^2 - 4 * a * c) * a^4 * c^2 - 1 \\
& 6 * (b^2 - 4 * a * c) * a^3 * b * c^2 - 24 * (b^2 - 4 * a * c) * a^2 * b^2 * c^2 + 16 * (b^2 - 4 * a * c) \\
& * a * b^3 * c^2 + 8 * (b^2 - 4 * a * c) * b^4 * c^2 + 32 * (b^2 - 4 * a * c) * a^3 * c^3 - 36 * (b^2 - \\
& 4 * a * c) * a * b^2 * c^3 - 4 * (b^2 - 4 * a * c) * b^3 * c^3 + 16 * (b^2 - 4 * a * c) * a^2 * c^4 + 16 \\
& * (b^2 - 4 * a * c) * a * b * c^4) * \text{abs}(a - b + c) * \text{abs}(c) + (2 * a^4 * b^3 * c^2 - 6 * a^3 * b^4 * \\
& c^2 + 6 * a^2 * b^5 * c^2 - 2 * a * b^6 * c^2 - 8 * a^5 * b * c^3 + 28 * a^4 * b^2 * c^3 - 30 * a^3 * b \\
& ^3 * c^3 + 10 * a^2 * b^4 * c^3 - 2 * a * b^5 * c^3 + 2 * b^6 * c^3 - 16 * a^5 * c^4 + 24 * a^4 * b * c \\
& ^4 - 4 * a^3 * b^2 * c^4 + 6 * a^2 * b^3 * c^4 - 6 * a * b^4 * c^4 - 4 * b^5 * c^4 - 16 * a^4 * c^5 + \\
& 8 * a^3 * b * c^5 - 12 * a^2 * b^2 * c^5 + 22 * a * b^3 * c^5 + 2 * b^4 * c^5 + 16 * a^3 * c^6 - 24 * \\
& a^2 * b * c^6 - 12 * a * b^2 * c^6 + 16 * a^2 * c^7 + 3 * \sqrt{a^2 - a * b + b * c - c^2 - \sqrt{b^2 - 4 * a * c}} \\
& (b^2 - 4 * a * c) * (a - b + c)) * \sqrt{b^2 - 4 * a * c} * a^4 * b * c^2 - 2 * (b^2 - 4 * a * c) * a^ \\
& 4 * b * c^2 - 5 * \sqrt{a^2 - a * b + b * c - c^2 - \sqrt{b^2 - 4 * a * c}} * (a - b + c)) * \sqrt{ \\
& t(b^2 - 4 * a * c) * a^3 * b^2 * c^2 + 6 * (b^2 - 4 * a * c) * a^3 * b^2 * c^2 - 3 * \sqrt{a^2 - a * b \\
& + b * c - c^2 - \sqrt{b^2 - 4 * a * c}} * (a - b + c)) * \sqrt{b^2 - 4 * a * c} * a^2 * b^3 * c^2 \\
& - 6 * (b^2 - 4 * a * c) * a^2 * b^3 * c^2 + 5 * \sqrt{a^2 - a * b + b * c - c^2 - \sqrt{b^2 - 4 * a * c}} \\
& 4 * a * c) * (a - b + c)) * \sqrt{b^2 - 4 * a * c} * a * b^4 * c^2 + 2 * (b^2 - 4 * a * c) * a * b^4 * c^2 \\
& + 6 * \sqrt{a^2 - a * b + b * c - c^2 - \sqrt{b^2 - 4 * a * c}} * (a - b + c)) * \sqrt{b^2 - 4 * a * c} \\
& 4 * a * c) * a^4 * c^3 - 4 * (b^2 - 4 * a * c) * a^4 * c^3 + 7 * \sqrt{a^2 - a * b + b * c - c^2 - \\
& \sqrt{b^2 - 4 * a * c}} * (a - b + c)) * \sqrt{b^2 - 4 * a * c} * a^3 * b * c^3 + 6 * (b^2 - 4 * a * c) \\
& ) * a^3 * b * c^3 - 13 * \sqrt{a^2 - a * b + b * c - c^2 - \sqrt{b^2 - 4 * a * c}} * (a - b + c) \\
& ) * \sqrt{b^2 - 4 * a * c} * a^2 * b^2 * c^3 - 2 * (b^2 - 4 * a * c) * a^2 * b^2 * c^3 - 3 * \sqrt{a^2 \\
& - a * b + b * c - c^2 - \sqrt{b^2 - 4 * a * c}} * (a - b + c)) * \sqrt{b^2 - 4 * a * c} * a * b^3 * \\
& c^3 + 2 * (b^2 - 4 * a * c) * a * b^3 * c^3 - 5 * \sqrt{a^2 - a * b + b * c - c^2 - \sqrt{b^2 - 4 * a * c}} \\
& 4 * a * c) * (a - b + c)) * \sqrt{b^2 - 4 * a * c} * b^4 * c^3 - 2 * (b^2 - 4 * a * c) * b^4 * c^3 + \\
& 22 * \sqrt{a^2 - a * b + b * c - c^2 - \sqrt{b^2 - 4 * a * c}} * (a - b + c)) * \sqrt{b^2 - 4 * \\
& a * c) * a^3 * c^4 - 4 * (b^2 - 4 * a * c) * a^3 * c^4 - 3 * \sqrt{a^2 - a * b + b * c - c^2 - \sqrt{ \\
& rt(b^2 - 4 * a * c) * (a - b + c)) * \sqrt{b^2 - 4 * a * c} * a^2 * b * c^4 + 2 * (b^2 - 4 * a * c) * \\
& a^2 * b * c^4 + 23 * \sqrt{a^2 - a * b + b * c - c^2 - \sqrt{b^2 - 4 * a * c}} * (a - b + c)) * \\
& \sqrt{b^2 - 4 * a * c} * a * b^2 * c^4 - 2 * (b^2 - 4 * a * c) * a * b^2 * c^4 + 6 * \sqrt{a^2 - a * b \\
& + b * c - c^2 - \sqrt{b^2 - 4 * a * c}} * (a - b + c)) * \sqrt{b^2 - 4 * a * c} * b^3 * c^4 + 4 * \\
& (b^2 - 4 * a * c) * b^3 * c^4 - 38 * \sqrt{a^2 - a * b + b * c - c^2 - \sqrt{b^2 - 4 * a * c}} * ( \\
& a - b + c)) * \sqrt{b^2 - 4 * a * c} * a^2 * c^5 + 4 * (b^2 - 4 * a * c) * a^2 * c^5 - 7 * \sqrt{a^2 \\
& 2 - a * b + b * c - c^2 - \sqrt{b^2 - 4 * a * c}} * (a - b + c)) * \sqrt{b^2 - 4 * a * c} * a * b * \\
& c^5 - 6 * (b^2 - 4 * a * c) * a * b * c^5 - 5 * \sqrt{a^2 - a * b + b * c - c^2 - \sqrt{b^2 - 4 * \\
& a * c) * (a - b + c)) * \sqrt{b^2 - 4 * a * c} * b^2 * c^5 - 2 * (b^2 - 4 * a * c) * b^2 * c^5 + 10 \\
& * \sqrt{a^2 - a * b + b * c - c^2 - \sqrt{b^2 - 4 * a * c}} * (a - b + c)) * \sqrt{b^2 - 4 * a
\end{aligned}$$

```

*c)*a*c^6 + 4*(b^2 - 4*a*c)*a*c^6)*abs(a - b + c))*(pi*floor(1/2*x/pi + 1/2
) + arctan(2*sqrt(1/2)*tan(1/2*x)/sqrt((2*a*c - 2*c^2 - sqrt(-4*(a*c + b*c
+ c^2)*(a*c - b*c + c^2) + 4*(a*c - c^2)^2))/(a*c - b*c + c^2))))/((3*a^6*b
^2*c^2 - 8*a^5*b^3*c^2 - a^4*b^4*c^2 + 16*a^3*b^5*c^2 - 7*a^2*b^6*c^2 - 8*a
*b^7*c^2 + 5*b^8*c^2 - 12*a^7*c^3 + 32*a^6*b*c^3 + 30*a^5*b^2*c^3 - 112*a^4
*b^3*c^3 + 8*a^3*b^4*c^3 + 96*a^2*b^5*c^3 - 26*a*b^6*c^3 - 16*b^7*c^3 - 104
*a^6*c^4 + 192*a^5*b*c^4 + 149*a^4*b^2*c^4 - 336*a^3*b^3*c^4 - 30*a^2*b^4*c
^4 + 112*a*b^5*c^4 + 17*b^6*c^4 - 276*a^5*c^5 + 320*a^4*b*c^5 + 292*a^3*b^2
*c^5 - 224*a^2*b^3*c^5 - 120*a*b^4*c^5 - 304*a^4*c^6 + 128*a^3*b*c^6 + 237*
a^2*b^2*c^6 + 24*a*b^3*c^6 - 17*b^4*c^6 - 116*a^3*c^7 - 96*a^2*b*c^7 + 62*a
*b^2*c^7 + 16*b^3*c^7 + 24*a^2*c^8 - 64*a*b*c^8 - 5*b^2*c^8 + 20*a*c^9)*abs
(c))

```

## Mupad [B] (verification not implemented)

Time = 16.96 (sec) , antiderivative size = 20133, normalized size of antiderivative = 78.95

$$\int \frac{\cos^2(x)}{a + b \cos(x) + c \cos^2(x)} dx = \text{Too large to display}$$

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

```

[Out] (2*atan((540672*a^4*tan(x/2))/(131072*a*b^3 - 393216*a^3*b + 655360*a^3*c +
540672*a^4 + 16384*b^4 - 360448*a^2*b^2 + 262144*a^2*c^2 + (147456*a^5)/c
- (16384*b^5)/c + (49152*a*b^4)/c - (147456*a^4*b)/c - (32768*a*b^5)/c^2 +
(229376*a^2*b^3)/c - (262144*a^3*b^2)/c + (32768*a^2*b^4)/c^2 + (32768*a^3*
b^3)/c^2 - (32768*a^4*b^2)/c^2 - 131072*a*b^2*c - 262144*a^2*b*c) + (16384*
b^4*tan(x/2))/(131072*a*b^3 - 393216*a^3*b + 655360*a^3*c + 540672*a^4 + 16
384*b^4 - 360448*a^2*b^2 + 262144*a^2*c^2 + (147456*a^5)/c - (16384*b^5)/c
+ (49152*a*b^4)/c - (147456*a^4*b)/c - (32768*a*b^5)/c^2 + (229376*a^2*b^3)
/c - (262144*a^3*b^2)/c + (32768*a^2*b^4)/c^2 + (32768*a^3*b^3)/c^2 - (3276
8*a^4*b^2)/c^2 - 131072*a*b^2*c - 262144*a^2*b*c) + (147456*a^5*tan(x/2))/(
49152*a*b^4 - 147456*a^4*b + 540672*a^4*c + 16384*b^4*c + 147456*a^5 - 1638
4*b^5 + 229376*a^2*b^3 - 262144*a^3*b^2 + 262144*a^2*c^3 + 655360*a^3*c^2 -
131072*a*b^2*c^2 - 262144*a^2*b*c^2 - 360448*a^2*b^2*c - (32768*a*b^5)/c +
(32768*a^2*b^4)/c + (32768*a^3*b^3)/c - (32768*a^4*b^2)/c + 131072*a*b^3*c
- 393216*a^3*b*c) - (16384*b^5*tan(x/2))/(49152*a*b^4 - 147456*a^4*b + 540
672*a^4*c + 16384*b^4*c + 147456*a^5 - 16384*b^5 + 229376*a^2*b^3 - 262144*
a^3*b^2 + 262144*a^2*c^3 + 655360*a^3*c^2 - 131072*a*b^2*c^2 - 262144*a^2*b
*c^2 - 360448*a^2*b^2*c - (32768*a*b^5)/c + (32768*a^2*b^4)/c + (32768*a^3*
b^3)/c - (32768*a^4*b^2)/c + 131072*a*b^3*c - 393216*a^3*b*c) - (360448*a^2
*b^2*tan(x/2))/(131072*a*b^3 - 393216*a^3*b + 655360*a^3*c + 540672*a^4 + 1
6384*b^4 - 360448*a^2*b^2 + 262144*a^2*c^2 + (147456*a^5)/c - (16384*b^5)/c
+ (49152*a*b^4)/c - (147456*a^4*b)/c - (32768*a*b^5)/c^2 + (229376*a^2*b^3
)/c - (262144*a^3*b^2)/c + (32768*a^2*b^4)/c^2 + (32768*a^3*b^3)/c^2 - (327

```

$$\begin{aligned}
& 68a^4b^2/c^2 - 131072a^2b^2c - 262144a^2b^2c) + (262144a^2c^2 \tan(x/2)) / ((131072a^2b^3 - 393216a^3b + 655360a^3c + 540672a^4 + 16384b^4 - \\
& 360448a^2b^2 + 262144a^2c^2 + (147456a^5)/c - (16384b^5)/c + (49152a^2b^4)/c - (147456a^4b)/c - (32768a^2b^5)/c^2 + (229376a^2b^3)/c - (2621 \\
& 44a^3b^2)/c + (32768a^2b^4)/c^2 + (32768a^3b^3)/c^2 - (32768a^4b^2)/ \\
& /c^2 - 131072a^2b^2c - 262144a^2b^2c) + (49152a^2b^4 \tan(x/2)) / (49152a^2b^4 - 147456a^4b + 540672a^4c + 16384b^4c + 147456a^5 - 16384b^5 + 2 \\
& 29376a^2b^3 - 262144a^3b^2 + 262144a^2c^3 + 655360a^3c^2 - 131072a^2b^2c^2 - 262144a^2b^2c^2 - 360448a^2b^2c - (32768a^2b^5)/c + (32768a^2b^4)/c + (32768a^3b^3)/c \\
& - (32768a^4b^2)/c + 131072a^2b^3c - 393216a^3b^2c) - (147456a^4b \tan(x/2)) / (49152a^2b^4 - 147456a^4b + 540672a^4c + 16384b^4c + 147456a^5 - 16384b^5 + 229376a^2b^3 - 262144a^3b^2 \\
& + 262144a^2c^3 + 655360a^3c^2 - 131072a^2b^2c^2 - 262144a^2b^2c^2 - 360448a^2b^2c - (32768a^2b^5)/c + (32768a^2b^4)/c + (32768a^3b^3)/c \\
& - (32768a^4b^2)/c + 131072a^2b^3c - 393216a^3b^2c) - (32768a^2b^5 \tan(x/2)) / ((147456a^5c - 32768a^2b^5 - 16384b^5c + 32768a^2b^4 + 32768a^3b^3 - 32768a^4b^2 + 262144a^2c^4 + 655360a^3c^3 + 540672a^4c^2 + 1 \\
& 6384b^4c^2 - 131072a^2b^2c^3 + 131072a^2b^3c^2 - 262144a^2b^2c^3 + 229376a^2b^3c - 393216a^3b^2c^2 - 262144a^3b^2c - 360448a^2b^2c^2 + 49152a^2b^4c - 147456a^4b^2c) + (229376a^2b^3 \tan(x/2)) / (49152a^2b^4 - 147456a^4b + 540672a^4c + 16384b^4c + 147456a^5 - 16384b^5 + 229376a^2b^3 - 262144a^3b^2 + 262144a^2c^3 + 655360a^3c^2 - 131072a^2b^2c^2 - 262144a^2b^2c^2 - 360448a^2b^2c - (32768a^2b^5)/c + (32768a^2b^4)/c + (32768a^3b^3)/c - (32768a^4b^2)/c + 131072a^2b^3c - 393216a^3b^2c) - (262144a^3b^2 \tan(x/2)) / (49152a^2b^4 - 147456a^4b + 540672a^4c + 16384b^4c + 147456a^5 - 16384b^5 + 229376a^2b^3 - 262144a^3b^2 + 262144a^2c^3 + 655360a^3c^2 - 131072a^2b^2c^2 - 262144a^2b^2c^2 - 360448a^2b^2c - (32768a^2b^5)/c + (32768a^2b^4)/c + (32768a^3b^3)/c - (32768a^4b^2)/c + 131072a^2b^3c - 393216a^3b^2c) + (131072a^2b^3 \tan(x/2)) / ((131072a^2b^3 - 393216a^3b + 655360a^3c + 540672a^4 + 16384b^4 - 360448a^2b^2 + 262144a^2c^2 + (147456a^5)/c - (16384b^5)/c + (49152a^2b^4)/c - (147456a^4b)/c - (32768a^2b^5)/c^2 + (229376a^2b^3)/c - (262144a^3b^2)/c + (32768a^2b^4)/c^2 + (32768a^3b^3)/c^2 - (32768a^4b^2)/c^2 - 131072a^2b^2c - 262144a^2b^2c) + (655360a^3c \tan(x/2)) / ((131072a^2b^3 - 393216a^3b + 655360a^3c + 540672a^4 + 16384b^4 - 360448a^2b^2 + 262144a^2c^2 + (147456a^5)/c - (16384b^5)/c + (49152a^2b^4)/c - (147456a^4b)/c - (32768a^2b^5)/c^2 + (229376a^2b^3)/c - (262144a^3b^2)/c + (32768a^2b^4)/c^2 + (32768a^3b^3)/c^2 - (32768a^4b^2)/c^2 - 131072a^2b^2c - 262144a^2b^2c) + (32768a^2b^4 \tan(x/2)) / (147456a^5c - 32768a^2b^5 - 16384b^5c + 32768a^2b^4 + 32768a^3b^3 - 32768a^4b^2 + 262144a^2c^4 +
\end{aligned}$$

$$\begin{aligned}
& 655360*a^3*c^3 + 540672*a^4*c^2 + 16384*b^4*c^2 - 131072*a*b^2*c^3 + 131072 \\
& *a*b^3*c^2 - 262144*a^2*b*c^3 + 229376*a^2*b^3*c - 393216*a^3*b*c^2 - 26214 \\
& 4*a^3*b^2*c - 360448*a^2*b^2*c^2 + 49152*a*b^4*c - 147456*a^4*b*c) + (32768 \\
& *a^3*b^3*\tan(x/2))/(147456*a^5*c - 32768*a*b^5 - 16384*b^5*c + 32768*a^2*b^ \\
& 4 + 32768*a^3*b^3 - 32768*a^4*b^2 + 262144*a^2*c^4 + 655360*a^3*c^3 + 54067 \\
& 2*a^4*c^2 + 16384*b^4*c^2 - 131072*a*b^2*c^3 + 131072*a*b^3*c^2 - 262144*a^ \\
& 2*b*c^3 + 229376*a^2*b^3*c - 393216*a^3*b*c^2 - 262144*a^3*b^2*c - 360448*a \\
& ^2*b^2*c^2 + 49152*a*b^4*c - 147456*a^4*b*c) - (32768*a^4*b^2*\tan(x/2))/(14 \\
& 7456*a^5*c - 32768*a*b^5 - 16384*b^5*c + 32768*a^2*b^4 + 32768*a^3*b^3 - 32 \\
& 768*a^4*b^2 + 262144*a^2*c^4 + 655360*a^3*c^3 + 540672*a^4*c^2 + 16384*b^4* \\
& c^2 - 131072*a*b^2*c^3 + 131072*a*b^3*c^2 - 262144*a^2*b*c^3 + 229376*a^2*b \\
& ^3*c - 393216*a^3*b*c^2 - 262144*a^3*b^2*c - 360448*a^2*b^2*c^2 + 49152*a*b \\
& ^4*c - 147456*a^4*b*c) - (131072*a*b^2*c*\tan(x/2))/(131072*a*b^3 - 393216*a \\
& ^3*b + 655360*a^3*c + 540672*a^4 + 16384*b^4 - 360448*a^2*b^2 + 262144*a^2* \\
& c^2 + (147456*a^5)/c - (16384*b^5)/c + (49152*a*b^4)/c - (147456*a^4*b)/c - \\
& (32768*a*b^5)/c^2 + (229376*a^2*b^3)/c - (262144*a^3*b^2)/c + (32768*a^2*b \\
& ^4)/c^2 + (32768*a^3*b^3)/c^2 - (32768*a^4*b^2)/c^2 - 131072*a*b^2*c - 2621 \\
& 44*a^2*b*c) - (262144*a^2*b*c*\tan(x/2))/(131072*a*b^3 - 393216*a^3*b + 6553 \\
& 60*a^3*c + 540672*a^4 + 16384*b^4 - 360448*a^2*b^2 + 262144*a^2*c^2 + (1474 \\
& 56*a^5)/c - (16384*b^5)/c + (49152*a*b^4)/c - (147456*a^4*b)/c - (32768*a*b \\
& ^5)/c^2 + (229376*a^2*b^3)/c - (262144*a^3*b^2)/c + (32768*a^2*b^4)/c^2 + ( \\
& 32768*a^3*b^3)/c^2 - (32768*a^4*b^2)/c^2 - 131072*a*b^2*c - 262144*a^2*b*c) \\
& ))/c + \operatorname{atan}\left(\frac{\left(\left(-a^2*b^4 - b^6 + 8*a^3*c^3 + 8*a^4*c^2 - b^3*(-(4*a*c - b^2)^3)\right)^{1/2} + a^2*b*(-(4*a*c - b^2)^3)^{1/2} - 6*a^3*b^2*c - 18*a^2*b^2*c^2 + 8*a*b^4*c + 2*a*b*c*(-(4*a*c - b^2)^3)^{1/2}\right)}{2*(16*a^2*c^6 + 32*a^3*c^5 + 16*a^4*c^4 + b^4*c^4 - b^6*c^2 - 8*a*b^2*c^5 + 10*a*b^4*c^3 - 32*a^2*b^2*c^4 + a^2*b^4*c^2 - 8*a^3*b^2*c^3)}\right)*\left(\tan(x/2)*(16384*a*b^6 - 65536*a*c^6 + 49152*b^6*c - 16384*b^7 + 16384*a^2*b^5 - 16384*a^3*b^4 + 245760*a^2*c^5 + 671744*a^3*c^4 + 212992*a^4*c^3 - 147456*a^5*c^2 + 16384*b^2*c^5 - 49152*b^3*c^4 + 65536*b^4*c^3 - 65536*b^5*c^2 - 327680*a*b^2*c^4 + 475136*a*b^3*c^3 - 393216*a*b^4*c^2 - 802816*a^2*b*c^4 - 180224*a^2*b^4*c - 1081344*a^3*b*c^3 - 65536*a^3*b^3*c + 49152*a^4*b*c^2 + 98304*a^4*b^2*c + 557056*a^2*b^2*c^3 + 180224*a^2*b^3*c^2 + 344064*a^3*b^2*c^2 + 196608*a*b*c^5 + 98304*a*b^5*c) - \left(-a^2*b^4 - b^6 + 8*a^3*c^3 + 8*a^4*c^2 - b^3*(-(4*a*c - b^2)^3)\right)^{1/2} + a^2*b*(-(4*a*c - b^2)^3)^{1/2} - 6*a^3*b^2*c - 18*a^2*b^2*c^2 + 8*a*b^4*c + 2*a*b*c*(-(4*a*c - b^2)^3)^{1/2}\right)}{2*(16*a^2*c^6 + 32*a^3*c^5 + 16*a^4*c^4 + b^4*c^4 - b^6*c^2 - 8*a*b^2*c^5 + 10*a*b^4*c^3 - 32*a^2*b^2*c^4 + a^2*b^4*c^2 - 8*a^3*b^2*c^3)}\right)*\left(8192*b^3*c^5 - 557056*a^3*c^5 - 425984*a^4*c^4 - 98304*a^5*c^3 - 229376*a^2*c^6 - 40960*b^4*c^4 + 57344*b^5*c^3 - 24576*b^6*c^2 + 221184*a*b^2*c^5 - 327680*a*b^3*c^4 + 90112*a*b^4*c^3 + 49152*a*b^5*c^2 + 393216*a^2*b*c^5 + 622592*a^3*b*c^4 + 196608*a^4*b*c^3 + \tan(x/2)*\left(-a^2*b^4 - b^6 + 8*a^3*c^3 + 8*a^4*c^2 - b^3*(-(4*a*c - b^2)^3)\right)^{1/2} + a^2*b*(-(4*a*c - b^2)^3)^{1/2} - 6*a^3*b^2*c - 18*a^2*b^2*c^2 + 8*a*b^4*c + 2*a*b*c*(-(4*a*c - b^2)^3)^{1/2}\right)}{2*(16*a^2*c^6 + 32*a^3*c^5 + 16*a^4*c^4 + b^4*c^4 - b^6*c^2 - 8*a*b^2*c^5 + 10*a*b^4*c^3 - 32*a^2*
\end{aligned}$$

$$\begin{aligned}
& b^2c^4 + a^2b^4c^2 - 8a^3b^2c^3))^{(1/2)} * (65536a^8c^8 - 131072a^7c^7 - 262144a^6c^6 + 131072a^5c^5 + 196608a^4c^4 - 16384b^2c^7 + 49152b^3c^6 - 65536b^4c^5 + 65536b^5c^4 - 49152b^6c^3 + 16384b^7c^2 + 294912ab^2c^6 - 409600ab^3c^5 + 376832ab^4c^4 - 114688ab^5c^3 - 16384ab^6c^2 + 589824a^2b^2c^6 + 720896a^3b^2c^5 - 65536a^4b^2c^4 - 655360a^2b^2c^5 + 16384a^2b^3c^4 + 196608a^2b^4c^3 - 16384a^2b^5c^2 - 557056a^3b^2c^4 + 81920a^3b^3c^3 + 16384a^3b^4c^2 - 114688a^4b^2c^3 - 196608ab^2c^7) + 172032a^2b^2c^4 - 352256a^2b^3c^3 + 106496a^3b^2c^3 - 49152a^3b^3c^2 + 24576a^4b^2c^2 - 32768ab^2c^6) \\
& ) * (- (a^2b^4 - b^6 + 8a^3c^3 + 8a^4c^2 - b^3 * (- (4ac - b^2)^3)^{(1/2)} + a^2b * (- (4ac - b^2)^3)^{(1/2)} - 6a^3b^2c - 18a^2b^2c^2 + 8ab^4c + 2ab^2c * (- (4ac - b^2)^3)^{(1/2)}) / (2 * (16a^2c^6 + 32a^3c^5 + 16a^4c^4 + b^4c^4 - b^6c^2 - 8ab^2c^5 + 10ab^4c^3 - 32a^2b^2c^4 + a^2b^4c^2 - 8a^3b^2c^3)))^{(1/2)} - 32768ab^5 + 24576a^5c - 49152b^5c + 24576b^6 - 16384a^2b^4 + 32768a^3b^3 - 8192a^4b^2 + 98304a^2c^4 + 253952a^3c^3 + 180224a^4c^2 - 8192b^3c^3 + 32768b^4c^2 - 155648ab^2c^3 + 262144ab^3c^2 - 270336a^2b^2c^3 + 237568a^2b^3c - 458752a^3b^2c^2 + 24576a^3b^2c + 16384a^2b^2c^2 + 32768ab^2c^4 - 114688ab^4c - 122880a^4b^2c) - \tan(x/2) * (40960ab^4 - 57344a^4b - 73728a^4c + 8192b^4c + 24576a^5 - 8192b^5 - 81920a^2b^3 + 81920a^3b^2 + 16384a^2c^3 - 81920a^3c^2 - 32768ab^2c^2 + 81920a^2b^2c^2 - 81920a^2b^2c + 163840a^3b^2c) * (- (a^2b^4 - b^6 + 8a^3c^3 + 8a^4c^2 - b^3 * (- (4ac - b^2)^3)^{(1/2)} + a^2b * (- (4ac - b^2)^3)^{(1/2)} - 6a^3b^2c - 18a^2b^2c^2 + 8ab^4c + 2ab^2c * (- (4ac - b^2)^3)^{(1/2)}) / (2 * (16a^2c^6 + 32a^3c^5 + 16a^4c^4 + b^4c^4 - b^6c^2 - 8ab^2c^5 + 10ab^4c^3 - 32a^2b^2c^4 + a^2b^4c^2 - 8a^3b^2c^3)))^{(1/2)} * i - ((- (a^2b^4 - b^6 + 8a^3c^3 + 8a^4c^2 - b^3 * (- (4ac - b^2)^3)^{(1/2)} + a^2b * (- (4ac - b^2)^3)^{(1/2)} - 6a^3b^2c - 18a^2b^2c^2 + 8ab^4c + 2ab^2c * (- (4ac - b^2)^3)^{(1/2)}) / (2 * (16a^2c^6 + 32a^3c^5 + 16a^4c^4 + b^4c^4 - b^6c^2 - 8ab^2c^5 + 10ab^4c^3 - 32a^2b^2c^4 + a^2b^4c^2 - 8a^3b^2c^3)))^{(1/2)} * (24576a^5c - 32768ab^5 - (\tan(x/2) * (16384ab^6 - 65536a^6c^6 + 49152b^6c - 16384b^7 + 16384a^2b^5 - 16384a^3b^4 + 245760a^2c^5 + 671744a^3c^4 + 212992a^4c^3 - 147456a^5c^2 + 16384b^2c^5 - 49152b^3c^4 + 65536b^4c^3 - 65536b^5c^2 - 327680ab^2c^4 + 475136ab^3c^3 - 393216ab^4c^2 - 802816a^2b^2c^4 - 180224a^2b^4c - 1081344a^3b^2c^3 - 65536a^3b^3c + 49152a^4b^2c^2 + 98304a^4b^2c + 557056a^2b^2c^3 + 180224a^2b^3c^2 + 344064a^3b^2c^2 + 196608ab^2c^5 + 98304ab^5c) - (- (a^2b^4 - b^6 + 8a^3c^3 + 8a^4c^2 - b^3 * (- (4ac - b^2)^3)^{(1/2)} + a^2b * (- (4ac - b^2)^3)^{(1/2)} - 6a^3b^2c - 18a^2b^2c^2 + 8ab^4c + 2ab^2c * (- (4ac - b^2)^3)^{(1/2)}) / (2 * (16a^2c^6 + 32a^3c^5 + 16a^4c^4 + b^4c^4 - b^6c^2 - 8ab^2c^5 + 10ab^4c^3 - 32a^2b^2c^4 + a^2b^4c^2 - 8a^3b^2c^3)))^{(1/2)} * (229376a^2c^6 + 557056a^3c^5 + 425984a^4c^4 + 98304a^5c^3 - 8192b^3c^5 + 40960b^4c^4 - 57344b^5c^3 + 24576b^6c^2 - 221184ab^2c^5 + 327680ab^3c^4 - 90112ab^4c^3 - 49152ab^5c^2 - 393216a^2b^2c^5 - 622592a^3b^2c^4 - 196608a^4b^2c^3
\end{aligned}$$

$$\begin{aligned}
&^3 + \tan(x/2)*(-(a^2*b^4 - b^6 + 8*a^3*c^3 + 8*a^4*c^2 - b^3*(-(4*a*c - b^2)^3)^{(1/2)} + a^2*b*(-(4*a*c - b^2)^3)^{(1/2)} - 6*a^3*b^2*c - 18*a^2*b^2*c^2 \\
&+ 8*a*b^4*c + 2*a*b*c*(-(4*a*c - b^2)^3)^{(1/2)})/(2*(16*a^2*c^6 + 32*a^3*c^5 + 16*a^4*c^4 + b^4*c^4 - b^6*c^2 - 8*a*b^2*c^5 + 10*a*b^4*c^3 - 32*a^2*b^2*c^4 + a^2*b^4*c^2 - 8*a^3*b^2*c^3)))^{(1/2)}*(65536*a*c^8 - 131072*a^2*c^7 - \\
&262144*a^3*c^6 + 131072*a^4*c^5 + 196608*a^5*c^4 - 16384*b^2*c^7 + 49152*b^3*c^6 - 65536*b^4*c^5 + 65536*b^5*c^4 - 49152*b^6*c^3 + 16384*b^7*c^2 + 29 \\
&4912*a*b^2*c^6 - 409600*a*b^3*c^5 + 376832*a*b^4*c^4 - 114688*a*b^5*c^3 - 16384*a*b^6*c^2 + 589824*a^2*b*c^6 + 720896*a^3*b*c^5 - 65536*a^4*b*c^4 - 65 \\
&5360*a^2*b^2*c^5 + 16384*a^2*b^3*c^4 + 196608*a^2*b^4*c^3 - 16384*a^2*b^5*c^2 - 557056*a^3*b^2*c^4 + 81920*a^3*b^3*c^3 + 16384*a^3*b^4*c^2 - 114688*a^4*b^2*c^3 - 196608*a*b*c^7) - 172032*a^2*b^2*c^4 + 352256*a^2*b^3*c^3 - 106 \\
&496*a^3*b^2*c^3 + 49152*a^3*b^3*c^2 - 24576*a^4*b^2*c^2 + 32768*a*b*c^6))*(- \\
&(a^2*b^4 - b^6 + 8*a^3*c^3 + 8*a^4*c^2 - b^3*(-(4*a*c - b^2)^3)^{(1/2)} + a^2*b*(-(4*a*c - b^2)^3)^{(1/2)} - 6*a^3*b^2*c - 18*a^2*b^2*c^2 + 8*a*b^4*c + 2 \\
&*a*b*c*(-(4*a*c - b^2)^3)^{(1/2)})/(2*(16*a^2*c^6 + 32*a^3*c^5 + 16*a^4*c^4 + b^4*c^4 - b^6*c^2 - 8*a*b^2*c^5 + 10*a*b^4*c^3 - 32*a^2*b^2*c^4 + a^2*b^4*c^2 - 8*a^3*b^2*c^3)))^{(1/2)} - 49152*b^5*c + 24576*b^6 - 16384*a^2*b^4 + 32 \\
&768*a^3*b^3 - 8192*a^4*b^2 + 98304*a^2*c^4 + 253952*a^3*c^3 + 180224*a^4*c^2 - 8192*b^3*c^3 + 32768*b^4*c^2 - 155648*a*b^2*c^3 + 262144*a*b^3*c^2 - 27 \\
&0336*a^2*b*c^3 + 237568*a^2*b^3*c - 458752*a^3*b*c^2 + 24576*a^3*b^2*c + 16384*a^2*b^2*c^2 + 32768*a*b*c^4 - 114688*a*b^4*c - 122880*a^4*b*c) + \tan(x/ \\
&2)*(40960*a*b^4 - 57344*a^4*b - 73728*a^4*c + 8192*b^4*c + 24576*a^5 - 8192 \\
&*b^5 - 81920*a^2*b^3 + 81920*a^3*b^2 + 16384*a^2*c^3 - 81920*a^3*c^2 - 3276 \\
&8*a*b^2*c^2 + 81920*a^2*b*c^2 - 81920*a^2*b^2*c + 163840*a^3*b*c))*(-(a^2*b^4 - b^6 + 8*a^3*c^3 + 8*a^4*c^2 - b^3*(-(4*a*c - b^2)^3)^{(1/2)} + a^2*b*(-(4 \\
&4*a*c - b^2)^3)^{(1/2)} - 6*a^3*b^2*c - 18*a^2*b^2*c^2 + 8*a*b^4*c + 2*a*b*c*(-(4*a*c - b^2)^3)^{(1/2)})/(2*(16*a^2*c^6 + 32*a^3*c^5 + 16*a^4*c^4 + b^4*c^4 - b^6*c^2 - 8*a*b^2*c^5 + 10*a*b^4*c^3 - 32*a^2*b^2*c^4 + a^2*b^4*c^2 - 8 \\
&*a^3*b^2*c^3)))^{(1/2)}*i)/(((-(a^2*b^4 - b^6 + 8*a^3*c^3 + 8*a^4*c^2 - b^3*(-(4*a*c - b^2)^3)^{(1/2)} + a^2*b*(-(4*a*c - b^2)^3)^{(1/2)} - 6*a^3*b^2*c - 1 \\
&8*a^2*b^2*c^2 + 8*a*b^4*c + 2*a*b*c*(-(4*a*c - b^2)^3)^{(1/2)})/(2*(16*a^2*c^6 + 32*a^3*c^5 + 16*a^4*c^4 + b^4*c^4 - b^6*c^2 - 8*a*b^2*c^5 + 10*a*b^4*c^3 - 32*a^2*b^2*c^4 + a^2*b^4*c^2 - 8*a^3*b^2*c^3)))^{(1/2)}*((\tan(x/2)*(16384 \\
&*a*b^6 - 65536*a*c^6 + 49152*b^6*c - 16384*b^7 + 16384*a^2*b^5 - 16384*a^3*b^4 + 245760*a^2*c^5 + 671744*a^3*c^4 + 212992*a^4*c^3 - 147456*a^5*c^2 + 1 \\
&6384*b^2*c^5 - 49152*b^3*c^4 + 65536*b^4*c^3 - 65536*b^5*c^2 - 327680*a*b^2*c^4 + 475136*a*b^3*c^3 - 393216*a*b^4*c^2 - 802816*a^2*b*c^4 - 180224*a^2*b^4*c - 1081344*a^3*b*c^3 - 65536*a^3*b^3*c + 49152*a^4*b*c^2 + 98304*a^4*b^2*c + 557056*a^2*b^2*c^3 + 180224*a^2*b^3*c^2 + 344064*a^3*b^2*c^2 + 19660 \\
&8*a*b*c^5 + 98304*a*b^5*c) - (-(a^2*b^4 - b^6 + 8*a^3*c^3 + 8*a^4*c^2 - b^3*(-(4*a*c - b^2)^3)^{(1/2)} + a^2*b*(-(4*a*c - b^2)^3)^{(1/2)} - 6*a^3*b^2*c - 18*a^2*b^2*c^2 + 8*a*b^4*c + 2*a*b*c*(-(4*a*c - b^2)^3)^{(1/2)})/(2*(16*a^2*c^6 + 32*a^3*c^5 + 16*a^4*c^4 + b^4*c^4 - b^6*c^2 - 8*a*b^2*c^5 + 10*a*b^4*c^3 - 32*a^2*b^2*c^4 + a^2*b^4*c^2 - 8*a^3*b^2*c^3)))^{(1/2)}*(8192*b^3*c^5 -
\end{aligned}$$

$$\begin{aligned}
& 557056a^3c^5 - 425984a^4c^4 - 98304a^5c^3 - 229376a^2c^6 - 40960b^4c^4 + 57344b^5c^3 - 24576b^6c^2 + 221184ab^2c^5 - 327680ab^3c^4 \\
& + 90112ab^4c^3 + 49152ab^5c^2 + 393216a^2b^2c^5 + 622592a^3b^2c^4 \\
& + 196608a^4b^2c^3 + \tan(x/2) * (-a^2b^4 - b^6 + 8a^3c^3 + 8a^4c^2 - b^3 * (-4ac - b^2)^3)^{(1/2)} + a^2b * (-4ac - b^2)^3)^{(1/2)} - 6a^3b^2c - \\
& 18a^2b^2c^2 + 8ab^4c + 2ab * (-4ac - b^2)^3)^{(1/2)} / (2 * (16a^2c^6 + 32a^3c^5 + 16a^4c^4 + b^4c^4 - b^6c^2 - 8ab^2c^5 + 10ab^4c^3 - 32a^2b^2c^4 + a^2b^4c^2 - 8a^3b^2c^3)))^{(1/2)} * (65536a^8c^8 - \\
& 131072a^2c^7 - 262144a^3c^6 + 131072a^4c^5 + 196608a^5c^4 - 16384b^2c^7 + 49152b^3c^6 - 65536b^4c^5 + 65536b^5c^4 - 49152b^6c^3 + 16 \\
& 384b^7c^2 + 294912ab^2c^6 - 409600ab^3c^5 + 376832ab^4c^4 - 1146 \\
& 88ab^5c^3 - 16384ab^6c^2 + 589824a^2b^2c^6 + 720896a^3b^2c^5 - 6553 \\
& 6a^4b^2c^4 - 655360a^2b^2c^5 + 16384a^2b^3c^4 + 196608a^2b^4c^3 - \\
& 16384a^2b^5c^2 - 557056a^3b^2c^4 + 81920a^3b^3c^3 + 16384a^3b^4 \\
& * c^2 - 114688a^4b^2c^3 - 196608a^4b^3c^2 + 172032a^2b^2c^4 - 352256a^2b^3c^3 + 106496a^3b^2c^3 - 49152a^3b^3c^2 + 24576a^4b^2c^2 - 3 \\
& 2768ab^2c^6) * (-a^2b^4 - b^6 + 8a^3c^3 + 8a^4c^2 - b^3 * (-4ac - b^2)^3)^{(1/2)} + a^2b * (-4ac - b^2)^3)^{(1/2)} - 6a^3b^2c - 18a^2b^2c^2 \\
& + 8ab^4c + 2ab * (-4ac - b^2)^3)^{(1/2)} / (2 * (16a^2c^6 + 32a^3c^5 + 16a^4c^4 + b^4c^4 - b^6c^2 - 8ab^2c^5 + 10ab^4c^3 - 32a^2b^2c^4 + a^2b^4c^2 - 8a^3b^2c^3)))^{(1/2)} - 32768ab^5 + 24576a^5c - \\
& 49152b^5c + 24576b^6 - 16384a^2b^4 + 32768a^3b^3 - 8192a^4b^2 + 98 \\
& 304a^2c^4 + 253952a^3c^3 + 180224a^4c^2 - 8192b^3c^3 + 32768b^4c^2 - \\
& 155648ab^2c^3 + 262144ab^3c^2 - 270336a^2b^2c^3 + 237568a^2b^3 \\
& * c - 458752a^3b^2c^2 + 24576a^3b^2c + 16384a^2b^2c^2 + 32768a^2b^3c^4 \\
& - 114688ab^4c - 122880a^4b^2c) - \tan(x/2) * (40960ab^4 - 57344a^4b - \\
& 73728a^4c + 8192b^4c + 24576a^5 - 8192b^5 - 81920a^2b^3 + 81920a^3b^2 + 16384a^2c^3 - 81920a^3c^2 - 32768ab^2c^2 + 81920a^2b^2c^2 - \\
& 81920a^2b^2c + 163840a^3b^2c) * (-a^2b^4 - b^6 + 8a^3c^3 + 8a^4c^2 - b^3 * (-4ac - b^2)^3)^{(1/2)} + a^2b * (-4ac - b^2)^3)^{(1/2)} - 6a^3b^2c - 18a^2b^2c^2 + 8ab^4c + 2ab * (-4ac - b^2)^3)^{(1/2)} / (2 * (16a^2c^6 + 32a^3c^5 + 16a^4c^4 + b^4c^4 - b^6c^2 - 8ab^2c^5 + 10ab^4c^3 - 32a^2b^2c^4 + a^2b^4c^2 - 8a^3b^2c^3)))^{(1/2)} + ((-a^2b^4 - b^6 + 8a^3c^3 + 8a^4c^2 - b^3 * (-4ac - b^2)^3)^{(1/2)} + a^2b * (-4ac - b^2)^3)^{(1/2)} - 6a^3b^2c - 18a^2b^2c^2 + 8ab^4c + 2ab * (-4ac - b^2)^3)^{(1/2)} / (2 * (16a^2c^6 + 32a^3c^5 + 16a^4c^4 + b^4c^4 - b^6c^2 - 8ab^2c^5 + 10ab^4c^3 - 32a^2b^2c^4 + a^2b^4c^2 - 8a^3b^2c^3)))^{(1/2)} * (24576a^5c - 32768ab^5 - (\tan(x/2) * (16384ab^6 - 65536a^6c^6 + 49152b^6c - 16384b^7 + 16384a^2b^5 - 16384a^3b^4 + 245760a^2c^5 + 671744a^3c^4 + 212992a^4c^3 - 147456a^5c^2 + 16384b^2c^5 - 49152b^3c^4 + 65536b^4c^3 - 65536b^5c^2 - 327680ab^2c^4 + 475136ab^3c^3 - 393216ab^4c^2 - 802816a^2b^2c^4 - 180224a^2b^4c - 1081344a^3b^2c^3 - 65536a^3b^3c + 49152a^4b^2c^2 + 98304a^4b^2c + 557056a^2b^2c^3 + 180224a^2b^3c^2 + 344064a^3b^2c^2 + 196608ab^2c^5 + 98304ab^5c) - (-a^2b^4 - b^6 + 8a^3c^3 + 8a^4c^2 - b^3 * (-4ac - b^2)^3)^{(1/2)} + a^2b * (-4ac - b^2)^3)^{(1/2)} - 6a^3b^2c - 18a^2b^2c^2 + 8ab^4c + 2ab * (-4ac - b^2)^3)^{(1/2)} / (2 * (16a^2c^6 + 32a^3c^5 + 16a^4c^4 + b^4c^4 - b^6c^2 - 8ab^2c^5 + 10ab^4c^3 - 32a^2b^2c^4 + a^2b^4c^2 - 8a^3b^2c^3)))^{(1/2)}
\end{aligned}$$

$$\begin{aligned}
& a^2c - b^2)^{3/2} + a^2b*(-(4ac - b^2)^{3/2}) - 6a^3b^2c - 18a^2 \\
& *b^2c^2 + 8a^2b^4c + 2a^2b^2c*(-(4ac - b^2)^{3/2})/(2(16a^2c^6 + 3 \\
& 2a^3c^5 + 16a^4c^4 + b^4c^4 - b^6c^2 - 8a^2b^2c^5 + 10a^2b^4c^3 - 3 \\
& 2a^2b^2c^4 + a^2b^4c^2 - 8a^3b^2c^3))^{1/2}*(229376a^2c^6 + 5570 \\
& 56a^3c^5 + 425984a^4c^4 + 98304a^5c^3 - 8192b^3c^5 + 40960b^4c^4 \\
& - 57344b^5c^3 + 24576b^6c^2 - 221184a^2b^2c^5 + 327680a^2b^3c^4 - 901 \\
& 12a^2b^4c^3 - 49152a^2b^5c^2 - 393216a^2b^2c^5 - 622592a^3b^2c^4 - 1966 \\
& 08a^4b^2c^3 + \tan(x/2)*(-(a^2b^4 - b^6 + 8a^3c^3 + 8a^4c^2 - b^3*(-(4 \\
& ac - b^2)^{3/2}) + a^2b*(-(4ac - b^2)^{3/2}) - 6a^3b^2c - 18a^2 \\
& 2b^2c^2 + 8a^2b^4c + 2a^2b^2c*(-(4ac - b^2)^{3/2})/(2(16a^2c^6 + \\
& 32a^3c^5 + 16a^4c^4 + b^4c^4 - b^6c^2 - 8a^2b^2c^5 + 10a^2b^4c^3 - \\
& 32a^2b^2c^4 + a^2b^4c^2 - 8a^3b^2c^3))^{1/2}*(65536a^2c^8 - 131072 \\
& a^2c^7 - 262144a^3c^6 + 131072a^4c^5 + 196608a^5c^4 - 16384b^2c^7 \\
& + 49152b^3c^6 - 65536b^4c^5 + 65536b^5c^4 - 49152b^6c^3 + 16384b^7 \\
& c^2 + 294912a^2b^2c^6 - 409600a^2b^3c^5 + 376832a^2b^4c^4 - 114688a^2b \\
& ^5c^3 - 16384a^2b^6c^2 + 589824a^2b^2c^6 + 720896a^3b^2c^5 - 65536a^4b \\
& ^2c^4 - 655360a^2b^2c^5 + 16384a^2b^3c^4 + 196608a^2b^4c^3 - 16384 \\
& a^2b^5c^2 - 557056a^3b^2c^4 + 81920a^3b^3c^3 + 16384a^3b^4c^2 - \\
& 114688a^4b^2c^3 - 196608a^4b^2c^3 - 172032a^2b^2c^4 + 352256a^2b^3 \\
& c^3 - 106496a^3b^2c^3 + 49152a^3b^3c^2 - 24576a^4b^2c^2 + 32768a^4 \\
& b^2c^2)*(-(a^2b^4 - b^6 + 8a^3c^3 + 8a^4c^2 - b^3*(-(4ac - b^2)^{3/2}) \\
& ^{1/2} + a^2b*(-(4ac - b^2)^{3/2}) - 6a^3b^2c - 18a^2b^2c^2 + 8a^2 \\
& b^4c + 2a^2b^2c*(-(4ac - b^2)^{3/2})/(2(16a^2c^6 + 32a^3c^5 + 16 \\
& a^4c^4 + b^4c^4 - b^6c^2 - 8a^2b^2c^5 + 10a^2b^4c^3 - 32a^2b^2c^4 \\
& + a^2b^4c^2 - 8a^3b^2c^3))^{1/2} - 49152b^5c + 24576b^6 - 16384a^2 \\
& 2b^4 + 32768a^3b^3 - 8192a^4b^2 + 98304a^2c^4 + 253952a^3c^3 + 180 \\
& 224a^4c^2 - 8192b^3c^3 + 32768b^4c^2 - 155648a^2b^2c^3 + 262144a^2b^3 \\
& c^2 - 270336a^2b^2c^3 + 237568a^2b^3c - 458752a^3b^2c^2 + 24576a^3b^2 \\
& c + 16384a^2b^2c^2 + 32768a^2b^2c^2 - 114688a^2b^4c - 122880a^4b^2c \\
& ) + \tan(x/2)*(40960a^2b^4 - 57344a^4b - 73728a^4c + 8192b^4c + 24576a^5 \\
& - 8192b^5 - 81920a^2b^3 + 81920a^3b^2 + 16384a^2c^3 - 81920a^3c^2 - \\
& 32768a^2b^2c^2 + 81920a^2b^2c^2 - 81920a^2b^2c + 163840a^3b^2c) \\
& )*(-(a^2b^4 - b^6 + 8a^3c^3 + 8a^4c^2 - b^3*(-(4ac - b^2)^{3/2})^{1/2} + \\
& a^2b*(-(4ac - b^2)^{3/2}) - 6a^3b^2c - 18a^2b^2c^2 + 8a^2b^4c \\
& + 2a^2b^2c*(-(4ac - b^2)^{3/2})/(2(16a^2c^6 + 32a^3c^5 + 16a^4c^4 \\
& + b^4c^4 - b^6c^2 - 8a^2b^2c^5 + 10a^2b^4c^3 - 32a^2b^2c^4 + a^2b^4 \\
& c^2 - 8a^3b^2c^3))^{1/2} - 65536a^3b + 49152a^3c + 49152a^4 + 1 \\
& 6384a^2b^2 - 16384a^2b^2c)*(-(a^2b^4 - b^6 + 8a^3c^3 + 8a^4c^2 - b^3 \\
& ^3*(-(4ac - b^2)^{3/2})^{1/2} + a^2b*(-(4ac - b^2)^{3/2}) - 6a^3b^2c \\
& - 18a^2b^2c^2 + 8a^2b^4c + 2a^2b^2c*(-(4ac - b^2)^{3/2})/(2(16a^2 \\
& c^6 + 32a^3c^5 + 16a^4c^4 + b^4c^4 - b^6c^2 - 8a^2b^2c^5 + 10a^2b^4 \\
& c^3 - 32a^2b^2c^4 + a^2b^4c^2 - 8a^3b^2c^3))^{1/2})*2i + \operatorname{atan}((\tan \\
& (x/2)*(40960a^2b^4 - 57344a^4b - 73728a^4c + 8192b^4c + 24576a^5 - \\
& 8192b^5 - 81920a^2b^3 + 81920a^3b^2 + 16384a^2c^3 - 81920a^3c^2 - \\
& 32768a^2b^2c^2 + 81920a^2b^2c^2 - 81920a^2b^2c + 163840a^3b^2c) + ((b
\end{aligned}$$



$$\begin{aligned}
&^6 - a^2b^4 - 8a^3c^3 - 8a^4c^2 - b^3(-4ac - b^2)^3)^{(1/2)} + a^2b \\
&*(-4ac - b^2)^3)^{(1/2)} + 6a^3b^2c + 18a^2b^2c^2 - 8ab^4c + 2a \\
&b^3c^3 - 8a^4c^2 - b^3(-4ac - b^2)^3)^{(1/2)} + a^2b^4c^2 \\
&- 8a^3b^2c^3))^{(1/2)} * (24576a^5c - 32768ab^5 - 49152b^5c + 24576 \\
&b^6 - 16384a^2b^4 + 32768a^3b^3 - 8192a^4b^2 + 98304a^2c^4 + 253952 \\
&a^3c^3 + 180224a^4c^2 - 8192b^3c^3 + 32768b^4c^2 + ((b^6 - a^2b^4 \\
&- 8a^3c^3 - 8a^4c^2 - b^3(-4ac - b^2)^3)^{(1/2)} + a^2b^4c^2 \\
&- 8a^3b^2c^3))^{(1/2)} + 6a^3b^2c + 18a^2b^2c^2 - 8ab^4c + 2a \\
&b^3c^3 - 8a^4c^2 - b^3(-4ac - b^2)^3)^{(1/2)} + a^2b^4c^2 - 8a^3b^2 \\
&c^3))^{(1/2)} * (229376a^2c^6 + 557056a^3c^5 + 425984a^4c^4 + 98304a^5 \\
&c^3 - 8192b^3c^5 + 40960b^4c^4 - 57344b^5c^3 + 24576b^6c^2 - 22118 \\
&4ab^2c^5 + 327680ab^3c^4 - 90112ab^4c^3 - 49152ab^5c^2 - 393216 \\
&a^2b^3c^5 - 622592a^3b^2c^4 - 196608a^4b^2c^3 - 172032a^2b^2c^4 + 352 \\
&256a^2b^3c^3 - 106496a^3b^2c^3 + 49152a^3b^3c^2 - 24576a^4b^2c^2 \\
&+ 32768ab^3c^6 + \tan(x/2) * ((b^6 - a^2b^4 - 8a^3c^3 - 8a^4c^2 - b^3 \\
&(-4ac - b^2)^3)^{(1/2)} + a^2b^4c^2 - 8a^3b^2c^3))^{(1/2)} + 6a^3b^2c + 1 \\
&8a^2b^2c^2 - 8ab^4c + 2ab^3c^3 - 8a^4c^2 - b^3(-4ac - b^2)^3)^{(1/2)} \\
&+ a^2b^4c^2 - 8a^3b^2c^3))^{(1/2)} * (16a^2c^6 + 32a^3c^5 + 16a^4c^4 + b^4c^4 - b^6c^2 - 8ab^2c^5 + 10ab^4c^3 \\
&- 32a^2b^2c^4 + a^2b^4c^2 - 8a^3b^2c^3))^{(1/2)} * (65536a^8 - 13 \\
&1072a^2c^7 - 262144a^3c^6 + 131072a^4c^5 + 196608a^5c^4 - 16384b^2 \\
&c^7 + 49152b^3c^6 - 65536b^4c^5 + 65536b^5c^4 - 49152b^6c^3 + 1638 \\
&4b^7c^2 + 294912ab^2c^6 - 409600ab^3c^5 + 376832ab^4c^4 - 114688 \\
&ab^5c^3 - 16384ab^6c^2 + 589824a^2b^2c^6 + 720896a^3b^2c^5 - 65536 \\
&a^4b^2c^4 - 655360a^2b^2c^5 + 16384a^2b^3c^4 + 196608a^2b^4c^3 - 1 \\
&6384a^2b^5c^2 - 557056a^3b^2c^4 + 81920a^3b^3c^3 + 16384a^3b^4c^2 \\
&- 114688a^4b^2c^3 - 196608ab^3c^7)) - \tan(x/2) * (16384ab^6 - 65536 \\
&a^2c^6 + 49152b^6c - 16384b^7 + 16384a^2b^5 - 16384a^3b^4 + 245760a^2 \\
&c^5 + 671744a^3c^4 + 212992a^4c^3 - 147456a^5c^2 + 16384b^2c^5 - \\
&49152b^3c^4 + 65536b^4c^3 - 65536b^5c^2 - 327680ab^2c^4 + 475136a \\
&b^3c^3 - 393216ab^4c^2 - 802816a^2b^2c^4 - 180224a^2b^4c - 1081344 \\
&a^3b^2c^3 - 65536a^3b^3c + 49152a^4b^2c^2 + 98304a^4b^2c + 557056a^2 \\
&b^2c^3 + 180224a^2b^3c^2 + 344064a^3b^2c^2 + 196608ab^3c^5 + 983 \\
&04ab^5c)) * ((b^6 - a^2b^4 - 8a^3c^3 - 8a^4c^2 - b^3(-4ac - b^2)^3)^{(1/2)} \\
&+ a^2b^4c^2 - 8a^3b^2c^3))^{(1/2)} + a^2b^4c^2 - 8a^3b^2c^3))^{(1/2)} + 6a^3b^2c + 18a^2b^2c^2 - \\
&8ab^4c + 2ab^3c^3 - 8a^4c^2 - b^3(-4ac - b^2)^3)^{(1/2)} + a^2b^4c^2 - 8a^3b^2 \\
&c^3))^{(1/2)} - 155648ab^2c^3 + 262144ab^3 \\
&c^2 - 270336a^2b^2c^3 + 237568a^2b^3c - 458752a^3b^2c^2 + 24576a^3b^2 \\
&c + 16384a^2b^2c^2 + 32768ab^3c^4 - 114688ab^4c - 122880a^4b^3c) \\
& * ((b^6 - a^2b^4 - 8a^3c^3 - 8a^4c^2 - b^3(-4ac - b^2)^3)^{(1/2)} + \\
&a^2b^4c^2 - 8a^3b^2c^3))^{(1/2)} + 6a^3b^2c + 18a^2b^2c^2 - 8ab^4c + \\
&2ab^3c^3 - 8a^4c^2 - b^3(-4ac - b^2)^3)^{(1/2)} + a^2b^4c^2 - 8a^3b^2 \\
&c^3))^{(1/2)} * (16a^2c^6 + 32a^3c^5 + 16a^4c^4 \\
&+ b^4c^4 - b^6c^2 - 8ab^2c^5 + 10ab^4c^3 - 32a^2b^2c^4 + a^2b^
\end{aligned}$$

$$\begin{aligned}
& 4c^2 - 8a^3b^2c^3))^{(1/2)} * i + (\tan(x/2) * (40960ab^4 - 57344a^4b - \\
& 73728a^4c + 8192b^4c + 24576a^5 - 8192b^5 - 81920a^2b^3 + 81920a^3 \\
& * b^2 + 16384a^2c^3 - 81920a^3c^2 - 32768ab^2c^2 + 81920a^2b^2c - \\
& 81920a^2b^2c + 163840a^3bc) - ((b^6 - a^2b^4 - 8a^3c^3 - 8a^4c^2 - \\
& b^3 * (-4ac - b^2)^3)^{(1/2)} + a^2b * (-4ac - b^2)^3)^{(1/2)} + 6a^3b^2c \\
& + 18a^2b^2c^2 - 8ab^4c + 2ab * (-4ac - b^2)^3)^{(1/2)}) / (2 * (16 \\
& a^2c^6 + 32a^3c^5 + 16a^4c^4 + b^4c^4 - b^6c^2 - 8ab^2c^5 + 10a \\
& * b^4c^3 - 32a^2b^2c^4 + a^2b^4c^2 - 8a^3b^2c^3))^{(1/2)} * (24576a^5 \\
& * c - 32768ab^5 - 49152b^5c + 24576b^6 - 16384a^2b^4 + 32768a^3b^3 \\
& - 8192a^4b^2 + 98304a^2c^4 + 253952a^3c^3 + 180224a^4c^2 - 8192b^3 \\
& * c^3 + 32768b^4c^2 - (((b^6 - a^2b^4 - 8a^3c^3 - 8a^4c^2 - b^3 * (-4a \\
& ac - b^2)^3)^{(1/2)} + a^2b * (-4ac - b^2)^3)^{(1/2)} + 6a^3b^2c + 18a^2 \\
& * b^2c^2 - 8ab^4c + 2ab * (-4ac - b^2)^3)^{(1/2)}) / (2 * (16a^2c^6 + 3 \\
& 2a^3c^5 + 16a^4c^4 + b^4c^4 - b^6c^2 - 8ab^2c^5 + 10a * b^4c^3 - 3 \\
& 2a^2b^2c^4 + a^2b^4c^2 - 8a^3b^2c^3))^{(1/2)} * (8192b^3c^5 - 557056 \\
& * a^3c^5 - 425984a^4c^4 - 98304a^5c^3 - 229376a^2c^6 - 40960b^4c^4 \\
& + 57344b^5c^3 - 24576b^6c^2 + 221184ab^2c^5 - 327680ab^3c^4 + 901 \\
& 12ab^4c^3 + 49152ab^5c^2 + 393216a^2b^2c^5 + 622592a^3b^2c^4 + 1966 \\
& 08a^4b^2c^3 + 172032a^2b^2c^4 - 352256a^2b^3c^3 + 106496a^3b^2c^3 \\
& - 49152a^3b^3c^2 + 24576a^4b^2c^2 - 32768ab^2c^6 + \tan(x/2) * ((b^6 - \\
& a^2b^4 - 8a^3c^3 - 8a^4c^2 - b^3 * (-4ac - b^2)^3)^{(1/2)} + a^2b * (- \\
& 4ac - b^2)^3)^{(1/2)} + 6a^3b^2c + 18a^2b^2c^2 - 8ab^4c + 2ab * (- \\
& (-4ac - b^2)^3)^{(1/2)}) / (2 * (16a^2c^6 + 32a^3c^5 + 16a^4c^4 + b^4c^4 \\
& - b^6c^2 - 8ab^2c^5 + 10a * b^4c^3 - 32a^2b^2c^4 + a^2b^4c^2 - 8 \\
& a^3b^2c^3))^{(1/2)} * (65536ac^8 - 131072a^2c^7 - 262144a^3c^6 + 1310 \\
& 72a^4c^5 + 196608a^5c^4 - 16384b^2c^7 + 49152b^3c^6 - 65536b^4c^5 \\
& + 65536b^5c^4 - 49152b^6c^3 + 16384b^7c^2 + 294912ab^2c^6 - 40960 \\
& 0ab^3c^5 + 376832ab^4c^4 - 114688ab^5c^3 - 16384ab^6c^2 + 58982 \\
& 4a^2b^2c^6 + 720896a^3b^2c^5 - 65536a^4b^2c^4 - 655360a^2b^2c^5 + 163 \\
& 84a^2b^3c^4 + 196608a^2b^4c^3 - 16384a^2b^5c^2 - 557056a^3b^2c^4 \\
& + 81920a^3b^3c^3 + 16384a^3b^4c^2 - 114688a^4b^2c^3 - 196608ab \\
& * c^7)) - \tan(x/2) * (16384ab^6 - 65536ac^6 + 49152b^6c - 16384b^7 + 16 \\
& 384a^2b^5 - 16384a^3b^4 + 245760a^2c^5 + 671744a^3c^4 + 212992a^4c \\
& c^3 - 147456a^5c^2 + 16384b^2c^5 - 49152b^3c^4 + 65536b^4c^3 - 6553 \\
& 6b^5c^2 - 327680ab^2c^4 + 475136ab^3c^3 - 393216ab^4c^2 - 802816 \\
& a^2b^2c^4 - 180224a^2b^4c - 1081344a^3b^2c^3 - 65536a^3b^3c + 49152 \\
& a^4b^2c^2 + 98304a^4b^2c + 557056a^2b^2c^3 + 180224a^2b^3c^2 + 34 \\
& 4064a^3b^2c^2 + 196608ab^2c^5 + 98304ab^5c)) * ((b^6 - a^2b^4 - 8a^3 \\
& * c^3 - 8a^4c^2 - b^3 * (-4ac - b^2)^3)^{(1/2)} + a^2b * (-4ac - b^2)^3)^{(1/2)} \\
& + 6a^3b^2c + 18a^2b^2c^2 - 8ab^4c + 2ab * (-4ac - b^2)^3)^{(1/2)}) / (2 * (16a^2c^6 + 32a^3c^5 + 16a^4c^4 + b^4c^4 - b^6c^2 - 8a \\
& * b^2c^5 + 10a * b^4c^3 - 32a^2b^2c^4 + a^2b^4c^2 - 8a^3b^2c^3))^{(1/2)} - 155648ab^2c^3 + 262144ab^3c^2 - 270336a^2b^2c^3 + 237568a^2 \\
& * b^3c - 458752a^3b^2c^2 + 24576a^3b^2c + 16384a^2b^2c^2 + 32768ab \\
& * c^4 - 114688ab^4c - 122880a^4bc)) * ((b^6 - a^2b^4 - 8a^3c^3 - 8a^4c^2 - b^3 * (-4ac - b^2)^3)^{(1/2)} + a^2b * (-4ac - b^2)^3)^{(1/2)} + 6a^3b^2c + 18a^2b^2c^2 - 8ab^4c + 2ab * (-4ac - b^2)^3)^{(1/2)}) / (2 * (16a^2c^6 + 32a^3c^5 + 16a^4c^4 + b^4c^4 - b^6c^2 - 8ab^2c^5 + 10a * b^4c^3 - 32a^2b^2c^4 + a^2b^4c^2 - 8a^3b^2c^3))^{(1/2)}
\end{aligned}$$

$$\begin{aligned}
& 4*c^2 - b^3*(-(4*a*c - b^2)^3)^{(1/2)} + a^2*b*(-(4*a*c - b^2)^3)^{(1/2)} + 6*a \\
& ^3*b^2*c + 18*a^2*b^2*c^2 - 8*a*b^4*c + 2*a*b*c*(-(4*a*c - b^2)^3)^{(1/2)})/( \\
& 2*(16*a^2*c^6 + 32*a^3*c^5 + 16*a^4*c^4 + b^4*c^4 - b^6*c^2 - 8*a*b^2*c^5 + \\
& 10*a*b^4*c^3 - 32*a^2*b^2*c^4 + a^2*b^4*c^2 - 8*a^3*b^2*c^3))^{(1/2)}*i)/ \\
& ((\tan(x/2)*(40960*a*b^4 - 57344*a^4*b - 73728*a^4*c + 8192*b^4*c + 24576*a^5 \\
& - 8192*b^5 - 81920*a^2*b^3 + 81920*a^3*b^2 + 16384*a^2*c^3 - 81920*a^3*c^2 \\
& - 32768*a*b^2*c^2 + 81920*a^2*b*c^2 - 81920*a^2*b^2*c + 163840*a^3*b*c) + \\
& ((b^6 - a^2*b^4 - 8*a^3*c^3 - 8*a^4*c^2 - b^3*(-(4*a*c - b^2)^3)^{(1/2)} + a^ \\
& 2*b*(-(4*a*c - b^2)^3)^{(1/2)} + 6*a^3*b^2*c + 18*a^2*b^2*c^2 - 8*a*b^4*c + 2 \\
& *a*b*c*(-(4*a*c - b^2)^3)^{(1/2)}))/(2*(16*a^2*c^6 + 32*a^3*c^5 + 16*a^4*c^4 + \\
& b^4*c^4 - b^6*c^2 - 8*a*b^2*c^5 + 10*a*b^4*c^3 - 32*a^2*b^2*c^4 + a^2*b^4*c \\
& ^2 - 8*a^3*b^2*c^3))^{(1/2)}*(24576*a^5*c - 32768*a*b^5 - 49152*b^5*c + 245 \\
& 76*b^6 - 16384*a^2*b^4 + 32768*a^3*b^3 - 8192*a^4*b^2 + 98304*a^2*c^4 + 253 \\
& 952*a^3*c^3 + 180224*a^4*c^2 - 8192*b^3*c^3 + 32768*b^4*c^2 + ((b^6 - a^2* \\
& b^4 - 8*a^3*c^3 - 8*a^4*c^2 - b^3*(-(4*a*c - b^2)^3)^{(1/2)} + a^2*b*(-(4*a*c \\
& - b^2)^3)^{(1/2)} + 6*a^3*b^2*c + 18*a^2*b^2*c^2 - 8*a*b^4*c + 2*a*b*c*(-(4* \\
& a*c - b^2)^3)^{(1/2)}))/(2*(16*a^2*c^6 + 32*a^3*c^5 + 16*a^4*c^4 + b^4*c^4 - b \\
& ^6*c^2 - 8*a*b^2*c^5 + 10*a*b^4*c^3 - 32*a^2*b^2*c^4 + a^2*b^4*c^2 - 8*a^3* \\
& b^2*c^3))^{(1/2)}*(229376*a^2*c^6 + 557056*a^3*c^5 + 425984*a^4*c^4 + 98304* \\
& a^5*c^3 - 8192*b^3*c^5 + 40960*b^4*c^4 - 57344*b^5*c^3 + 24576*b^6*c^2 - 22 \\
& 1184*a*b^2*c^5 + 327680*a*b^3*c^4 - 90112*a*b^4*c^3 - 49152*a*b^5*c^2 - 393 \\
& 216*a^2*b*c^5 - 622592*a^3*b*c^4 - 196608*a^4*b*c^3 - 172032*a^2*b^2*c^4 + \\
& 352256*a^2*b^3*c^3 - 106496*a^3*b^2*c^3 + 49152*a^3*b^3*c^2 - 24576*a^4*b^2 \\
& *c^2 + 32768*a*b*c^6 + \tan(x/2)*((b^6 - a^2*b^4 - 8*a^3*c^3 - 8*a^4*c^2 - b \\
& ^3*(-(4*a*c - b^2)^3)^{(1/2)} + a^2*b*(-(4*a*c - b^2)^3)^{(1/2)} + 6*a^3*b^2*c \\
& + 18*a^2*b^2*c^2 - 8*a*b^4*c + 2*a*b*c*(-(4*a*c - b^2)^3)^{(1/2)}))/(2*(16*a^2 \\
& *c^6 + 32*a^3*c^5 + 16*a^4*c^4 + b^4*c^4 - b^6*c^2 - 8*a*b^2*c^5 + 10*a*b^4 \\
& *c^3 - 32*a^2*b^2*c^4 + a^2*b^4*c^2 - 8*a^3*b^2*c^3))^{(1/2)}*(65536*a*c^8 - \\
& 131072*a^2*c^7 - 262144*a^3*c^6 + 131072*a^4*c^5 + 196608*a^5*c^4 - 16384* \\
& b^2*c^7 + 49152*b^3*c^6 - 65536*b^4*c^5 + 65536*b^5*c^4 - 49152*b^6*c^3 + 1 \\
& 6384*b^7*c^2 + 294912*a*b^2*c^6 - 409600*a*b^3*c^5 + 376832*a*b^4*c^4 - 114 \\
& 688*a*b^5*c^3 - 16384*a*b^6*c^2 + 589824*a^2*b*c^6 + 720896*a^3*b*c^5 - 655 \\
& 36*a^4*b*c^4 - 655360*a^2*b^2*c^5 + 16384*a^2*b^3*c^4 + 196608*a^2*b^4*c^3 \\
& - 16384*a^2*b^5*c^2 - 557056*a^3*b^2*c^4 + 81920*a^3*b^3*c^3 + 16384*a^3*b^ \\
& 4*c^2 - 114688*a^4*b^2*c^3 - 196608*a*b*c^7)) - \tan(x/2)*(16384*a*b^6 - 655 \\
& 36*a*c^6 + 49152*b^6*c - 16384*b^7 + 16384*a^2*b^5 - 16384*a^3*b^4 + 245760 \\
& *a^2*c^5 + 671744*a^3*c^4 + 212992*a^4*c^3 - 147456*a^5*c^2 + 16384*b^2*c^5 \\
& - 49152*b^3*c^4 + 65536*b^4*c^3 - 65536*b^5*c^2 - 327680*a*b^2*c^4 + 47513 \\
& 6*a*b^3*c^3 - 393216*a*b^4*c^2 - 802816*a^2*b*c^4 - 180224*a^2*b^4*c - 1081 \\
& 344*a^3*b*c^3 - 65536*a^3*b^3*c + 49152*a^4*b*c^2 + 98304*a^4*b^2*c + 55705 \\
& 6*a^2*b^2*c^3 + 180224*a^2*b^3*c^2 + 344064*a^3*b^2*c^2 + 196608*a*b*c^5 + \\
& 98304*a*b^5*c))*(b^6 - a^2*b^4 - 8*a^3*c^3 - 8*a^4*c^2 - b^3*(-(4*a*c - b^ \\
& 2)^3)^{(1/2)} + a^2*b*(-(4*a*c - b^2)^3)^{(1/2)} + 6*a^3*b^2*c + 18*a^2*b^2*c^2 \\
& - 8*a*b^4*c + 2*a*b*c*(-(4*a*c - b^2)^3)^{(1/2)}))/(2*(16*a^2*c^6 + 32*a^3*c^ \\
& 5 + 16*a^4*c^4 + b^4*c^4 - b^6*c^2 - 8*a*b^2*c^5 + 10*a*b^4*c^3 - 32*a^2*b^
\end{aligned}$$

$$\begin{aligned}
& 2*c^4 + a^2*b^4*c^2 - 8*a^3*b^2*c^3))^{(1/2)} - 155648*a*b^2*c^3 + 262144*a* \\
& b^3*c^2 - 270336*a^2*b*c^3 + 237568*a^2*b^3*c - 458752*a^3*b*c^2 + 24576*a^ \\
& 3*b^2*c + 16384*a^2*b^2*c^2 + 32768*a*b*c^4 - 114688*a*b^4*c - 122880*a^4*b \\
& *c))*((b^6 - a^2*b^4 - 8*a^3*c^3 - 8*a^4*c^2 - b^3*(-(4*a*c - b^2)^3)^{(1/2)} \\
& + a^2*b*(-(4*a*c - b^2)^3)^{(1/2)} + 6*a^3*b^2*c + 18*a^2*b^2*c^2 - 8*a*b^4* \\
& c + 2*a*b*c*(-(4*a*c - b^2)^3)^{(1/2)})/(2*(16*a^2*c^6 + 32*a^3*c^5 + 16*a^4* \\
& c^4 + b^4*c^4 - b^6*c^2 - 8*a*b^2*c^5 + 10*a*b^4*c^3 - 32*a^2*b^2*c^4 + a^2 \\
& *b^4*c^2 - 8*a^3*b^2*c^3))^{(1/2)} - (\tan(x/2)*(40960*a*b^4 - 57344*a^4*b - \\
& 73728*a^4*c + 8192*b^4*c + 24576*a^5 - 8192*b^5 - 81920*a^2*b^3 + 81920*a^3 \\
& *b^2 + 16384*a^2*c^3 - 81920*a^3*c^2 - 32768*a*b^2*c^2 + 81920*a^2*b*c^2 - \\
& 81920*a^2*b^2*c + 163840*a^3*b*c) - ((b^6 - a^2*b^4 - 8*a^3*c^3 - 8*a^4*c^2 \\
& - b^3*(-(4*a*c - b^2)^3)^{(1/2)} + a^2*b*(-(4*a*c - b^2)^3)^{(1/2)} + 6*a^3*b^ \\
& 2*c + 18*a^2*b^2*c^2 - 8*a*b^4*c + 2*a*b*c*(-(4*a*c - b^2)^3)^{(1/2)})/(2*(16 \\
& *a^2*c^6 + 32*a^3*c^5 + 16*a^4*c^4 + b^4*c^4 - b^6*c^2 - 8*a*b^2*c^5 + 10*a \\
& *b^4*c^3 - 32*a^2*b^2*c^4 + a^2*b^4*c^2 - 8*a^3*b^2*c^3))^{(1/2)}*(24576*a^5 \\
& *c - 32768*a*b^5 - 49152*b^5*c + 24576*b^6 - 16384*a^2*b^4 + 32768*a^3*b^3 \\
& - 8192*a^4*b^2 + 98304*a^2*c^4 + 253952*a^3*c^3 + 180224*a^4*c^2 - 8192*b^3 \\
& *c^3 + 32768*b^4*c^2 - (((b^6 - a^2*b^4 - 8*a^3*c^3 - 8*a^4*c^2 - b^3*(-(4* \\
& a*c - b^2)^3)^{(1/2)} + a^2*b*(-(4*a*c - b^2)^3)^{(1/2)} + 6*a^3*b^2*c + 18*a^2 \\
& *b^2*c^2 - 8*a*b^4*c + 2*a*b*c*(-(4*a*c - b^2)^3)^{(1/2)})/(2*(16*a^2*c^6 + 3 \\
& 2*a^3*c^5 + 16*a^4*c^4 + b^4*c^4 - b^6*c^2 - 8*a*b^2*c^5 + 10*a*b^4*c^3 - 3 \\
& 2*a^2*b^2*c^4 + a^2*b^4*c^2 - 8*a^3*b^2*c^3))^{(1/2)}*(8192*b^3*c^5 - 557056 \\
& *a^3*c^5 - 425984*a^4*c^4 - 98304*a^5*c^3 - 229376*a^2*c^6 - 40960*b^4*c^4 \\
& + 57344*b^5*c^3 - 24576*b^6*c^2 + 221184*a*b^2*c^5 - 327680*a*b^3*c^4 + 901 \\
& 12*a*b^4*c^3 + 49152*a*b^5*c^2 + 393216*a^2*b*c^5 + 622592*a^3*b*c^4 + 1966 \\
& 08*a^4*b*c^3 + 172032*a^2*b^2*c^4 - 352256*a^2*b^3*c^3 + 106496*a^3*b^2*c^3 \\
& - 49152*a^3*b^3*c^2 + 24576*a^4*b^2*c^2 - 32768*a*b*c^6 + \tan(x/2)*((b^6 - \\
& a^2*b^4 - 8*a^3*c^3 - 8*a^4*c^2 - b^3*(-(4*a*c - b^2)^3)^{(1/2)} + a^2*b*(-( \\
& 4*a*c - b^2)^3)^{(1/2)} + 6*a^3*b^2*c + 18*a^2*b^2*c^2 - 8*a*b^4*c + 2*a*b*c* \\
& (- (4*a*c - b^2)^3)^{(1/2)})/(2*(16*a^2*c^6 + 32*a^3*c^5 + 16*a^4*c^4 + b^4*c^ \\
& 4 - b^6*c^2 - 8*a*b^2*c^5 + 10*a*b^4*c^3 - 32*a^2*b^2*c^4 + a^2*b^4*c^2 - 8 \\
& *a^3*b^2*c^3))^{(1/2)}*(65536*a*c^8 - 131072*a^2*c^7 - 262144*a^3*c^6 + 1310 \\
& 72*a^4*c^5 + 196608*a^5*c^4 - 16384*b^2*c^7 + 49152*b^3*c^6 - 65536*b^4*c^5 \\
& + 65536*b^5*c^4 - 49152*b^6*c^3 + 16384*b^7*c^2 + 294912*a*b^2*c^6 - 40960 \\
& 0*a*b^3*c^5 + 376832*a*b^4*c^4 - 114688*a*b^5*c^3 - 16384*a*b^6*c^2 + 58982 \\
& 4*a^2*b*c^6 + 720896*a^3*b*c^5 - 65536*a^4*b*c^4 - 655360*a^2*b^2*c^5 + 163 \\
& 84*a^2*b^3*c^4 + 196608*a^2*b^4*c^3 - 16384*a^2*b^5*c^2 - 557056*a^3*b^2*c^ \\
& 4 + 81920*a^3*b^3*c^3 + 16384*a^3*b^4*c^2 - 114688*a^4*b^2*c^3 - 196608*a*b \\
& *c^7)) - \tan(x/2)*(16384*a*b^6 - 65536*a*c^6 + 49152*b^6*c - 16384*b^7 + 16 \\
& 384*a^2*b^5 - 16384*a^3*b^4 + 245760*a^2*c^5 + 671744*a^3*c^4 + 212992*a^4* \\
& c^3 - 147456*a^5*c^2 + 16384*b^2*c^5 - 49152*b^3*c^4 + 65536*b^4*c^3 - 6553 \\
& 6*b^5*c^2 - 327680*a*b^2*c^4 + 475136*a*b^3*c^3 - 393216*a*b^4*c^2 - 802816 \\
& *a^2*b*c^4 - 180224*a^2*b^4*c - 1081344*a^3*b*c^3 - 65536*a^3*b^3*c + 49152 \\
& *a^4*b*c^2 + 98304*a^4*b^2*c + 557056*a^2*b^2*c^3 + 180224*a^2*b^3*c^2 + 34 \\
& 4064*a^3*b^2*c^2 + 196608*a*b*c^5 + 98304*a*b^5*c))*((b^6 - a^2*b^4 - 8*a^3
\end{aligned}$$

$$\begin{aligned}
& *c^3 - 8*a^4*c^2 - b^3*(-(4*a*c - b^2)^3)^{(1/2)} + a^2*b*(-(4*a*c - b^2)^3)^{(1/2)} \\
& + 6*a^3*b^2*c + 18*a^2*b^2*c^2 - 8*a*b^4*c + 2*a*b*c*(-(4*a*c - b^2)^3)^{(1/2)}) / (2*(16*a^2*c^6 + 32*a^3*c^5 + 16*a^4*c^4 + b^4*c^4 - b^6*c^2 - 8* \\
& a*b^2*c^5 + 10*a*b^4*c^3 - 32*a^2*b^2*c^4 + a^2*b^4*c^2 - 8*a^3*b^2*c^3))^{(1/2)} - 155648*a*b^2*c^3 + 262144*a*b^3*c^2 - 270336*a^2*b*c^3 + 237568*a^2 \\
& *b^3*c - 458752*a^3*b*c^2 + 24576*a^3*b^2*c + 16384*a^2*b^2*c^2 + 32768*a*b \\
& *c^4 - 114688*a*b^4*c - 122880*a^4*b*c)) * ((b^6 - a^2*b^4 - 8*a^3*c^3 - 8*a^4*c^2 - b^3*(-(4*a*c - b^2)^3)^{(1/2)} + a^2*b*(-(4*a*c - b^2)^3)^{(1/2)} + 6*a \\
& ^3*b^2*c + 18*a^2*b^2*c^2 - 8*a*b^4*c + 2*a*b*c*(-(4*a*c - b^2)^3)^{(1/2)}) / ( \\
& 2*(16*a^2*c^6 + 32*a^3*c^5 + 16*a^4*c^4 + b^4*c^4 - b^6*c^2 - 8*a*b^2*c^5 + \\
& 10*a*b^4*c^3 - 32*a^2*b^2*c^4 + a^2*b^4*c^2 - 8*a^3*b^2*c^3))^{(1/2)} - 655 \\
& 36*a^3*b + 49152*a^3*c + 49152*a^4 + 16384*a^2*b^2 - 16384*a^2*b*c)) * ((b^6 \\
& - a^2*b^4 - 8*a^3*c^3 - 8*a^4*c^2 - b^3*(-(4*a*c - b^2)^3)^{(1/2)} + a^2*b*(- \\
& (4*a*c - b^2)^3)^{(1/2)} + 6*a^3*b^2*c + 18*a^2*b^2*c^2 - 8*a*b^4*c + 2*a*b*c \\
& *(-(4*a*c - b^2)^3)^{(1/2)}) / (2*(16*a^2*c^6 + 32*a^3*c^5 + 16*a^4*c^4 + b^4*c \\
& ^4 - b^6*c^2 - 8*a*b^2*c^5 + 10*a*b^4*c^3 - 32*a^2*b^2*c^4 + a^2*b^4*c^2 - \\
& 8*a^3*b^2*c^3))^{(1/2)} * 2i
\end{aligned}$$

### 3.16 $\int \frac{\cos(x)}{a+b \cos(x)+c \cos^2(x)} dx$

Optimal result	254
Rubi [A] (verified)	254
Mathematica [A] (verified)	256
Maple [A] (verified)	256
Fricas [B] (verification not implemented)	257
Sympy [F(-1)]	259
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#### Optimal result

Integrand size = 17, antiderivative size = 230

$$\int \frac{\cos(x)}{a+b \cos(x)+c \cos^2(x)} dx = \frac{2\left(1 - \frac{b}{\sqrt{b^2-4ac}}\right) \arctan\left(\frac{\sqrt{b-2c-\sqrt{b^2-4ac}} \tan\left(\frac{x}{2}\right)}{\sqrt{b+2c-\sqrt{b^2-4ac}}}\right)}{\sqrt{b-2c-\sqrt{b^2-4ac}}\sqrt{b+2c-\sqrt{b^2-4ac}}} + \frac{2\left(1 + \frac{b}{\sqrt{b^2-4ac}}\right) \arctan\left(\frac{\sqrt{b-2c+\sqrt{b^2-4ac}} \tan\left(\frac{x}{2}\right)}{\sqrt{b+2c+\sqrt{b^2-4ac}}}\right)}{\sqrt{b-2c+\sqrt{b^2-4ac}}\sqrt{b+2c+\sqrt{b^2-4ac}}}$$

[Out] 2\*arctan((b-2\*c-(-4\*a\*c+b^2)^(1/2))^(1/2)\*tan(1/2\*x)/(b+2\*c-(-4\*a\*c+b^2)^(1/2))^(1/2))\*(1-b/(-4\*a\*c+b^2)^(1/2))/(b-2\*c-(-4\*a\*c+b^2)^(1/2))^(1/2)/(b+2\*c-(-4\*a\*c+b^2)^(1/2))^(1/2)+2\*arctan((b-2\*c+(-4\*a\*c+b^2)^(1/2))^(1/2)\*tan(1/2\*x)/(b+2\*c+(-4\*a\*c+b^2)^(1/2))^(1/2))\*(1+b/(-4\*a\*c+b^2)^(1/2))/(b-2\*c+(-4\*a\*c+b^2)^(1/2))^(1/2)/(b+2\*c+(-4\*a\*c+b^2)^(1/2))^(1/2)

#### Rubi [A] (verified)

Time = 0.59 (sec) , antiderivative size = 230, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 3,  $\frac{\text{number of rules}}{\text{integrand size}} = 0.176$ , Rules used = {3338, 2738, 211}

$$\int \frac{\cos(x)}{a+b \cos(x)+c \cos^2(x)} dx = \frac{2\left(1 - \frac{b}{\sqrt{b^2-4ac}}\right) \arctan\left(\frac{\tan\left(\frac{x}{2}\right) \sqrt{-\sqrt{b^2-4ac}+b-2c}}{\sqrt{-\sqrt{b^2-4ac}+b+2c}}\right)}{\sqrt{-\sqrt{b^2-4ac}+b-2c}\sqrt{-\sqrt{b^2-4ac}+b+2c}} + \frac{2\left(\frac{b}{\sqrt{b^2-4ac}} + 1\right) \arctan\left(\frac{\tan\left(\frac{x}{2}\right) \sqrt{\sqrt{b^2-4ac}+b-2c}}{\sqrt{\sqrt{b^2-4ac}+b+2c}}\right)}{\sqrt{\sqrt{b^2-4ac}+b-2c}\sqrt{\sqrt{b^2-4ac}+b+2c}}$$

[In] Int[Cos[x]/(a + b\*Cos[x] + c\*Cos[x]^2),x]

[Out] (2\*(1 - b/Sqrt[b^2 - 4\*a\*c])\*ArcTan[(Sqrt[b - 2\*c - Sqrt[b^2 - 4\*a\*c]]\*Tan[x/2])/Sqrt[b + 2\*c - Sqrt[b^2 - 4\*a\*c]])/(Sqrt[b - 2\*c - Sqrt[b^2 - 4\*a\*c]]\*Sqrt[b + 2\*c - Sqrt[b^2 - 4\*a\*c]]) + (2\*(1 + b/Sqrt[b^2 - 4\*a\*c])\*ArcTan[(Sqrt[b - 2\*c + Sqrt[b^2 - 4\*a\*c]]\*Tan[x/2])/Sqrt[b + 2\*c + Sqrt[b^2 - 4\*a\*c]])/(Sqrt[b - 2\*c + Sqrt[b^2 - 4\*a\*c]]\*Sqrt[b + 2\*c + Sqrt[b^2 - 4\*a\*c]])

Rule 211

Int[((a\_) + (b\_)\*(x\_)^2)^(-1), x\_Symbol] := Simp[(Rt[a/b, 2]/a)\*ArcTan[x/Rt[a/b, 2]], x] /; FreeQ[{a, b}, x] && PosQ[a/b]

Rule 2738

Int[((a\_) + (b\_)\*sin[Pi/2 + (c\_) + (d\_)\*(x\_)])^(-1), x\_Symbol] := With[{e = FreeFactors[Tan[(c + d\*x)/2], x]}, Dist[2\*(e/d), Subst[Int[1/(a + b + (a - b)\*e^2\*x^2), x], x, Tan[(c + d\*x)/2]/e], x] /; FreeQ[{a, b, c, d}, x] && NeQ[a^2 - b^2, 0]

Rule 3338

Int[cos[(d\_) + (e\_)\*(x\_)]^(m\_)\*((a\_) + cos[(d\_) + (e\_)\*(x\_)]^(n\_)\*(b\_) + cos[(d\_) + (e\_)\*(x\_)]^(n2\_)\*(c\_))^(p\_), x\_Symbol] := Int[ExpandTrig[cos[d + e\*x]^m\*(a + b\*cos[d + e\*x]^n + c\*cos[d + e\*x]^(2\*n))^p, x], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[n2, 2\*n] && NeQ[b^2 - 4\*a\*c, 0] && IntegersQ[m, n, p]

Rubi steps

$$\begin{aligned}
 \text{integral} &= \int \left( \frac{1 - \frac{b}{\sqrt{b^2 - 4ac}}}{b - \sqrt{b^2 - 4ac} + 2c \cos(x)} + \frac{1 + \frac{b}{\sqrt{b^2 - 4ac}}}{b + \sqrt{b^2 - 4ac} + 2c \cos(x)} \right) dx \\
 &= \left( 1 - \frac{b}{\sqrt{b^2 - 4ac}} \right) \int \frac{1}{b - \sqrt{b^2 - 4ac} + 2c \cos(x)} dx \\
 &\quad + \left( 1 + \frac{b}{\sqrt{b^2 - 4ac}} \right) \int \frac{1}{b + \sqrt{b^2 - 4ac} + 2c \cos(x)} dx \\
 &= \left( 2 \left( 1 - \frac{b}{\sqrt{b^2 - 4ac}} \right) \right) \text{Subst} \left( \int \frac{1}{b + 2c - \sqrt{b^2 - 4ac} + (b - 2c - \sqrt{b^2 - 4ac}) x^2} dx, x, \tan \left( \frac{x}{2} \right) \right) \\
 &\quad + \left( 2 \left( 1 + \frac{b}{\sqrt{b^2 - 4ac}} \right) \right) \text{Subst} \left( \int \frac{1}{b + 2c + \sqrt{b^2 - 4ac} + (b - 2c + \sqrt{b^2 - 4ac}) x^2} dx, x, \tan \left( \frac{x}{2} \right) \right)
 \end{aligned}$$

$$\begin{aligned}
& 2\left(1 - \frac{b}{\sqrt{b^2-4ac}}\right) \arctan\left(\frac{\sqrt{b-2c-\sqrt{b^2-4ac}}\tan\left(\frac{x}{2}\right)}{\sqrt{b+2c-\sqrt{b^2-4ac}}}\right) \\
= & \frac{2\left(1 - \frac{b}{\sqrt{b^2-4ac}}\right) \arctan\left(\frac{\sqrt{b-2c-\sqrt{b^2-4ac}}\tan\left(\frac{x}{2}\right)}{\sqrt{b+2c-\sqrt{b^2-4ac}}}\right)}{\sqrt{b-2c-\sqrt{b^2-4ac}}\sqrt{b+2c-\sqrt{b^2-4ac}}} \\
& + \frac{2\left(1 + \frac{b}{\sqrt{b^2-4ac}}\right) \arctan\left(\frac{\sqrt{b-2c+\sqrt{b^2-4ac}}\tan\left(\frac{x}{2}\right)}{\sqrt{b+2c+\sqrt{b^2-4ac}}}\right)}{\sqrt{b-2c+\sqrt{b^2-4ac}}\sqrt{b+2c+\sqrt{b^2-4ac}}}
\end{aligned}$$

### Mathematica [A] (verified)

Time = 0.84 (sec) , antiderivative size = 227, normalized size of antiderivative = 0.99

$$\begin{aligned}
& \int \frac{\cos(x)}{a + b \cos(x) + c \cos^2(x)} dx \\
= & \frac{\sqrt{2} \left( -\frac{(b+\sqrt{b^2-4ac}) \operatorname{arctanh}\left(\frac{(b-2c+\sqrt{b^2-4ac}) \tan\left(\frac{x}{2}\right)}{\sqrt{-2b^2+4c(a+c)-2b\sqrt{b^2-4ac}}}\right)}{\sqrt{-b^2+2c(a+c)-b\sqrt{b^2-4ac}}} + \frac{(-b+\sqrt{b^2-4ac}) \operatorname{arctanh}\left(\frac{(-b+2c+\sqrt{b^2-4ac}) \tan\left(\frac{x}{2}\right)}{\sqrt{-2b^2+4c(a+c)+2b\sqrt{b^2-4ac}}}\right)}{\sqrt{-b^2+2c(a+c)+b\sqrt{b^2-4ac}}} \right)}{\sqrt{b^2-4ac}}
\end{aligned}$$

[In] Integrate[Cos[x]/(a + b\*Cos[x] + c\*Cos[x]^2), x]

[Out] (Sqrt[2]\*(-(((b + Sqrt[b^2 - 4\*a\*c])\*ArcTanh[((b - 2\*c + Sqrt[b^2 - 4\*a\*c])\*Tan[x/2])/Sqrt[-2\*b^2 + 4\*c\*(a + c) - 2\*b\*Sqrt[b^2 - 4\*a\*c]]])/Sqrt[-b^2 + 2\*c\*(a + c) - b\*Sqrt[b^2 - 4\*a\*c]]) + ((-b + Sqrt[b^2 - 4\*a\*c])\*ArcTanh[((-b + 2\*c + Sqrt[b^2 - 4\*a\*c])\*Tan[x/2])/Sqrt[-2\*b^2 + 4\*c\*(a + c) + 2\*b\*Sqrt[b^2 - 4\*a\*c]]])/Sqrt[-b^2 + 2\*c\*(a + c) + b\*Sqrt[b^2 - 4\*a\*c]]))/Sqrt[b^2 - 4\*a\*c]

### Maple [A] (verified)

Time = 1.17 (sec) , antiderivative size = 208, normalized size of antiderivative = 0.90

method	result
default	$2(a-b+c) \left( \frac{(2a-b-\sqrt{-4ac+b^2}) \operatorname{arctanh}\left(\frac{(-a+b-c)\tan\left(\frac{x}{2}\right)}{\sqrt{(\sqrt{-4ac+b^2}-a+c)(a-b+c)}}\right)}{2\sqrt{-4ac+b^2}(a-b+c)\sqrt{(\sqrt{-4ac+b^2}-a+c)(a-b+c)}} + \frac{(-2a+b-\sqrt{-4ac+b^2}) \operatorname{arctan}\left(\frac{(a-b+c)\tan\left(\frac{x}{2}\right)}{\sqrt{(\sqrt{-4ac+b^2}+a-c)(a-b+c)}}\right)}{2\sqrt{-4ac+b^2}(a-b+c)\sqrt{(\sqrt{-4ac+b^2}+a-c)(a-b+c)}} \right)$
risch	$\sum_{R=\text{RootOf}((16a^4c^2-8a^3b^2c+32c^3a^3+a^2b^4-32a^2b^2c^2+16a^2c^4+10ab^4c-8ab^2c^3-b^6+b^4c^2)-Z^4+(-8a^3c+2a^2b^2-8a^2c^2+6ab^2c-b^6+4a^2c^2)Z^2+(-8a^3c+2a^2b^2-8a^2c^2+6ab^2c-b^6+4a^2c^2))} \dots$

[In] int(cos(x)/(a+cos(x)\*b+c\*cos(x)^2), x, method=\_RETURNVERBOSE)

[Out] 2\*(a-b+c)\*(1/2\*(2\*a-b-(-4\*a\*c+b^2)^(1/2)))/(-4\*a\*c+b^2)^(1/2)/(a-b+c)/(((4\*a\*c+b^2)^(1/2)-a+c)\*(a-b+c))^(1/2)\*arctanh((-a+b-c)\*tan(1/2\*x)/(((4\*a\*c+b^2)^(1/2)-a+c)\*(a-b+c))^(1/2))



$$2)^{(1/2)-a+c}*(a-b+c))^{(1/2)}+1/2*(-2*a+b-(-4*a*c+b^2)^{(1/2)})/(-4*a*c+b^2)^{(1/2)}/(a-b+c)/((( -4*a*c+b^2)^{(1/2)}+a-c)*(a-b+c))^{(1/2)}*\arctan((a-b+c)*\tan(1/2*x)/((( -4*a*c+b^2)^{(1/2)}+a-c)*(a-b+c))^{(1/2)}))$$

### Fricas [B] (verification not implemented)

Leaf count of result is larger than twice the leaf count of optimal. 3513 vs. 2(189) = 378.

Time = 0.57 (sec) , antiderivative size = 3513, normalized size of antiderivative = 15.27

$$\int \frac{\cos(x)}{a + b \cos(x) + c \cos^2(x)} dx = \text{Too large to display}$$

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

[Out] 
$$\begin{aligned} & -1/4*\sqrt{2}*\sqrt{-(2*a^2 - b^2 + 2*a*c - (a^2*b^2 - b^4 - 4*a*c^3 - (8*a^2 \\ & - b^2)*c^2 - 2*(2*a^3 - 3*a*b^2)*c)*\sqrt{b^2/(a^4*b^2 - 2*a^2*b^4 + b^6 - \\ & 4*a*c^5 - (16*a^2 - b^2)*c^4 - 12*(2*a^3 - a*b^2)*c^3 - 2*(8*a^4 - 11*a^2*b \\ & ^2 + b^4)*c^2 - 4*(a^5 - 3*a^3*b^2 + 2*a*b^4)*c)}}/(a^2*b^2 - b^4 - 4*a*c^3 \\ & - (8*a^2 - b^2)*c^2 - 2*(2*a^3 - 3*a*b^2)*c))*\log(a*b^2*\cos(x) + 2*a*b*c + \\ & (a^3*b^2 - a*b^4 - 4*a^2*c^3 - (8*a^3 - a*b^2)*c^2 - 2*(2*a^4 - 3*a^2*b^2) \\ & *c)*\sqrt{b^2/(a^4*b^2 - 2*a^2*b^4 + b^6 - 4*a*c^5 - (16*a^2 - b^2)*c^4 - 12 \\ & *(2*a^3 - a*b^2)*c^3 - 2*(8*a^4 - 11*a^2*b^2 + b^4)*c^2 - 4*(a^5 - 3*a^3*b^ \\ & 2 + 2*a*b^4)*c))*\cos(x) + 1/2*\sqrt{2}*((a^3*b^3 - a*b^5 + 4*a*b*c^4 + (4*a^ \\ & 2*b - b^3)*c^3 - (4*a^3*b + 5*a*b^3)*c^2 - (4*a^4*b - 5*a^2*b^3 - b^5)*c)*\sqrt{ \\ & b^2/(a^4*b^2 - 2*a^2*b^4 + b^6 - 4*a*c^5 - (16*a^2 - b^2)*c^4 - 12*(2*a \\ & ^3 - a*b^2)*c^3 - 2*(8*a^4 - 11*a^2*b^2 + b^4)*c^2 - 4*(a^5 - 3*a^3*b^2 + 2 \\ & *a*b^4)*c))*\sin(x) + (a*b^3 - 4*a*b*c^2 - (4*a^2*b - b^3)*c)*\sin(x))*\sqrt{-( \\ & (2*a^2 - b^2 + 2*a*c - (a^2*b^2 - b^4 - 4*a*c^3 - (8*a^2 - b^2)*c^2 - 2*(2* \\ & a^3 - 3*a*b^2)*c)*\sqrt{b^2/(a^4*b^2 - 2*a^2*b^4 + b^6 - 4*a*c^5 - (16*a^2 - \\ & b^2)*c^4 - 12*(2*a^3 - a*b^2)*c^3 - 2*(8*a^4 - 11*a^2*b^2 + b^4)*c^2 - 4*( \\ & a^5 - 3*a^3*b^2 + 2*a*b^4)*c)}}/(a^2*b^2 - b^4 - 4*a*c^3 - (8*a^2 - b^2)*c^ \\ & 2 - 2*(2*a^3 - 3*a*b^2)*c))) + 1/4*\sqrt{2}*\sqrt{-(2*a^2 - b^2 + 2*a*c - (a^ \\ & 2*b^2 - b^4 - 4*a*c^3 - (8*a^2 - b^2)*c^2 - 2*(2*a^3 - 3*a*b^2)*c)*\sqrt{b^2 \\ & / (a^4*b^2 - 2*a^2*b^4 + b^6 - 4*a*c^5 - (16*a^2 - b^2)*c^4 - 12*(2*a^3 - a* \\ & b^2)*c^3 - 2*(8*a^4 - 11*a^2*b^2 + b^4)*c^2 - 4*(a^5 - 3*a^3*b^2 + 2*a*b^4) \\ & *c)}}/(a^2*b^2 - b^4 - 4*a*c^3 - (8*a^2 - b^2)*c^2 - 2*(2*a^3 - 3*a*b^2)*c) \\ & )*\log(a*b^2*\cos(x) + 2*a*b*c + (a^3*b^2 - a*b^4 - 4*a^2*c^3 - (8*a^3 - a*b^ \\ & 2)*c^2 - 2*(2*a^4 - 3*a^2*b^2)*c)*\sqrt{b^2/(a^4*b^2 - 2*a^2*b^4 + b^6 - 4*a \\ & *c^5 - (16*a^2 - b^2)*c^4 - 12*(2*a^3 - a*b^2)*c^3 - 2*(8*a^4 - 11*a^2*b^2 \\ & + b^4)*c^2 - 4*(a^5 - 3*a^3*b^2 + 2*a*b^4)*c))*\cos(x) - 1/2*\sqrt{2}*((a^3*b \\ & ^3 - a*b^5 + 4*a*b*c^4 + (4*a^2*b - b^3)*c^3 - (4*a^3*b + 5*a*b^3)*c^2 - (4 \\ & *a^4*b - 5*a^2*b^3 - b^5)*c)*\sqrt{b^2/(a^4*b^2 - 2*a^2*b^4 + b^6 - 4*a*c^5 \\ & - (16*a^2 - b^2)*c^4 - 12*(2*a^3 - a*b^2)*c^3 - 2*(8*a^4 - 11*a^2*b^2 + b^4 \\ & )*c^2 - 4*(a^5 - 3*a^3*b^2 + 2*a*b^4)*c))*\sin(x) + (a*b^3 - 4*a*b*c^2 - (4* \\ & a^2*b - b^3)*c)*\sin(x))*\sqrt{-(2*a^2 - b^2 + 2*a*c - (a^2*b^2 - b^4 - 4*a*c} \end{aligned}$$

$$\begin{aligned}
&^3 - (8a^2 - b^2)c^2 - 2(2a^3 - 3ab^2)c) \sqrt{b^2/(a^4b^2 - 2a^2b^4 + b^6 - 4ac^5 - (16a^2 - b^2)c^4 - 12(2a^3 - ab^2)c^3 - 2(8a^4 - 11a^2b^2 + b^4)c^2 - 4(a^5 - 3a^3b^2 + 2ab^4)c)}} / (a^2b^2 - b^4 - 4ac^3 - (8a^2 - b^2)c^2 - 2(2a^3 - 3ab^2)c)) - 1/4 \sqrt{2} \sqrt{-(2a^2 - b^2 + 2ac + (a^2b^2 - b^4 - 4ac^3 - (8a^2 - b^2)c^2 - 2(2a^3 - 3ab^2)c) \sqrt{b^2/(a^4b^2 - 2a^2b^4 + b^6 - 4ac^5 - (16a^2 - b^2)c^4 - 12(2a^3 - ab^2)c^3 - 2(8a^4 - 11a^2b^2 + b^4)c^2 - 4(a^5 - 3a^3b^2 + 2ab^4)c)}})} / (a^2b^2 - b^4 - 4ac^3 - (8a^2 - b^2)c^2 - 2(2a^3 - 3ab^2)c)) * \log(-ab^2 \cos(x) - 2ab^2c + (a^3b^2 - ab^4 - 4a^2c^3 - (8a^3 - ab^2)c^2 - 2(2a^4 - 3a^2b^2)c) \sqrt{b^2/(a^4b^2 - 2a^2b^4 + b^6 - 4ac^5 - (16a^2 - b^2)c^4 - 12(2a^3 - ab^2)c^3 - 2(8a^4 - 11a^2b^2 + b^4)c^2 - 4(a^5 - 3a^3b^2 + 2ab^4)c)}}) * \cos(x) + 1/2 \sqrt{2} * ((a^3b^3 - ab^5 + 4ab^2c^4 + (4a^2b - b^3)c^3 - (4a^3b + 5ab^3)c^2 - (4a^4b - 5a^2b^3 - b^5)c) \sqrt{b^2/(a^4b^2 - 2a^2b^4 + b^6 - 4ac^5 - (16a^2 - b^2)c^4 - 12(2a^3 - ab^2)c^3 - 2(8a^4 - 11a^2b^2 + b^4)c^2 - 4(a^5 - 3a^3b^2 + 2ab^4)c)}}) * \sin(x) - (ab^3 - 4ab^2c^2 - (4a^2b - b^3)c) \sin(x) \sqrt{-(2a^2 - b^2 + 2ac + (a^2b^2 - b^4 - 4ac^3 - (8a^2 - b^2)c^2 - 2(2a^3 - 3ab^2)c) \sqrt{b^2/(a^4b^2 - 2a^2b^4 + b^6 - 4ac^5 - (16a^2 - b^2)c^4 - 12(2a^3 - ab^2)c^3 - 2(8a^4 - 11a^2b^2 + b^4)c^2 - 4(a^5 - 3a^3b^2 + 2ab^4)c)}})} / (a^2b^2 - b^4 - 4ac^3 - (8a^2 - b^2)c^2 - 2(2a^3 - 3ab^2)c)) + 1/4 \sqrt{2} \sqrt{-(2a^2 - b^2 + 2ac + (a^2b^2 - b^4 - 4ac^3 - (8a^2 - b^2)c^2 - 2(2a^3 - 3ab^2)c) \sqrt{b^2/(a^4b^2 - 2a^2b^4 + b^6 - 4ac^5 - (16a^2 - b^2)c^4 - 12(2a^3 - ab^2)c^3 - 2(8a^4 - 11a^2b^2 + b^4)c^2 - 4(a^5 - 3a^3b^2 + 2ab^4)c)}})} / (a^2b^2 - b^4 - 4ac^3 - (8a^2 - b^2)c^2 - 2(2a^3 - 3ab^2)c)) * \log(-ab^2 \cos(x) - 2ab^2c + (a^3b^2 - ab^4 - 4a^2c^3 - (8a^3 - ab^2)c^2 - 2(2a^4 - 3a^2b^2)c) \sqrt{b^2/(a^4b^2 - 2a^2b^4 + b^6 - 4ac^5 - (16a^2 - b^2)c^4 - 12(2a^3 - ab^2)c^3 - 2(8a^4 - 11a^2b^2 + b^4)c^2 - 4(a^5 - 3a^3b^2 + 2ab^4)c)}}) * \cos(x) - 1/2 \sqrt{2} * ((a^3b^3 - ab^5 + 4ab^2c^4 + (4a^2b - b^3)c^3 - (4a^3b + 5ab^3)c^2 - (4a^4b - 5a^2b^3 - b^5)c) \sqrt{b^2/(a^4b^2 - 2a^2b^4 + b^6 - 4ac^5 - (16a^2 - b^2)c^4 - 12(2a^3 - ab^2)c^3 - 2(8a^4 - 11a^2b^2 + b^4)c^2 - 4(a^5 - 3a^3b^2 + 2ab^4)c)}}) * \sin(x) - (ab^3 - 4ab^2c^2 - (4a^2b - b^3)c) \sin(x) \sqrt{-(2a^2 - b^2 + 2ac + (a^2b^2 - b^4 - 4ac^3 - (8a^2 - b^2)c^2 - 2(2a^3 - 3ab^2)c) \sqrt{b^2/(a^4b^2 - 2a^2b^4 + b^6 - 4ac^5 - (16a^2 - b^2)c^4 - 12(2a^3 - ab^2)c^3 - 2(8a^4 - 11a^2b^2 + b^4)c^2 - 4(a^5 - 3a^3b^2 + 2ab^4)c)}})} / (a^2b^2 - b^4 - 4ac^3 - (8a^2 - b^2)c^2 - 2(2a^3 - 3ab^2)c))
\end{aligned}$$

**Sympy [F(-1)]**

Timed out.

$$\int \frac{\cos(x)}{a + b \cos(x) + c \cos^2(x)} dx = \text{Timed out}$$

[In] integrate(cos(x)/(a+b\*cos(x)+c\*cos(x)\*\*2),x)

[Out] Timed out

**Maxima [F]**

$$\int \frac{\cos(x)}{a + b \cos(x) + c \cos^2(x)} dx = \int \frac{\cos(x)}{c \cos(x)^2 + b \cos(x) + a} dx$$

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

[Out] integrate(cos(x)/(c\*cos(x)^2 + b\*cos(x) + a), x)

**Giac [B] (verification not implemented)**

Leaf count of result is larger than twice the leaf count of optimal. 2973 vs. 2(189) = 378.

Time = 2.34 (sec) , antiderivative size = 2973, normalized size of antiderivative = 12.93

$$\int \frac{\cos(x)}{a + b \cos(x) + c \cos^2(x)} dx = \text{Too large to display}$$

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

[Out] (4\*a^3\*b^2 - 6\*a^2\*b^3 + 4\*a\*b^4 - 2\*b^5 - 16\*a^4\*c + 24\*a^3\*b\*c - 24\*a^2\*b^2\*c + 20\*a\*b^3\*c + 32\*a^3\*c^2 - 48\*a^2\*b\*c^2 - 12\*a\*b^2\*c^2 + 2\*b^3\*c^2 + 48\*a^2\*c^3 - 8\*a\*b\*c^3 + 3\*sqrt(a^2 - a\*b + b\*c - c^2 + sqrt(b^2 - 4\*a\*c))\*(a - b + c))\*a^2\*b^2 - 2\*sqrt(a^2 - a\*b + b\*c - c^2 + sqrt(b^2 - 4\*a\*c))\*(a - b + c))\*a\*b^3 - 5\*sqrt(a^2 - a\*b + b\*c - c^2 + sqrt(b^2 - 4\*a\*c))\*(a - b + c))\*b^4 - 12\*sqrt(a^2 - a\*b + b\*c - c^2 + sqrt(b^2 - 4\*a\*c))\*(a - b + c))\*a^3\*c + 8\*sqrt(a^2 - a\*b + b\*c - c^2 + sqrt(b^2 - 4\*a\*c))\*(a - b + c))\*a^2\*b\*c + 34\*sqrt(a^2 - a\*b + b\*c - c^2 + sqrt(b^2 - 4\*a\*c))\*(a - b + c))\*a\*b^2\*c + 6\*sqrt(a^2 - a\*b + b\*c - c^2 + sqrt(b^2 - 4\*a\*c))\*(a - b + c))\*b^3\*c - 56\*sqrt(a^2 - a\*b + b\*c - c^2 + sqrt(b^2 - 4\*a\*c))\*(a - b + c))\*a^2\*c^2 - 24\*sqrt(a^2 - a\*b + b\*c - c^2 + sqrt(b^2 - 4\*a\*c))\*(a - b + c))\*a\*b\*c^2 - 5\*sqrt(a^2 - a\*b + b\*c - c^2 + sqrt(b^2 - 4\*a\*c))\*(a - b + c))\*b^2\*c^2 + 20\*sqrt(a^2 - a\*b + b\*c - c^2 + sqrt(b^2 - 4\*a\*c))\*(a - b + c))\*a\*c^3 + 6\*sqrt(a^2 - a\*b + b\*c - c^2 + sqrt(b^2 - 4\*a\*c))\*(a - b + c))\*sqrt(b^2 - 4\*a\*c)\*a^3 - 4\*(b^2 - 4\*a\*c)\*a^3 - sqrt(a^2 - a\*b + b\*c - c^2 + sqrt(b^2 - 4\*a\*c))\*(a - b + c)

$$\begin{aligned}
&))\sqrt{b^2 - 4ac}a^2b + 6(b^2 - 4ac)a^2b - 12\sqrt{a^2 - ab + bc} \\
&c - c^2 + \sqrt{b^2 - 4ac}(a - b + c))\sqrt{b^2 - 4ac}ab^2 - 4(b^2 - \\
&4ac)ab^2 - 5\sqrt{a^2 - ab + bc} - c^2 + \sqrt{b^2 - 4ac}(a - b + c \\
&))\sqrt{b^2 - 4ac}b^3 + 2(b^2 - 4ac)b^3 + 28\sqrt{a^2 - ab + bc} - \\
&c^2 + \sqrt{b^2 - 4ac}(a - b + c))\sqrt{b^2 - 4ac}a^2c + 8(b^2 - 4a \\
&ac)a^2c + 26\sqrt{a^2 - ab + bc} - c^2 + \sqrt{b^2 - 4ac}(a - b + c) * \\
&\sqrt{b^2 - 4ac}ab^3c - 12(b^2 - 4ac)ab^3c + 6\sqrt{a^2 - ab + bc} - \\
&c^2 + \sqrt{b^2 - 4ac}(a - b + c))\sqrt{b^2 - 4ac}b^2c - 10\sqrt{a^2 \\
&- ab + bc - c^2 + \sqrt{b^2 - 4ac}(a - b + c))\sqrt{b^2 - 4ac}ac^2 \\
&+ 12(b^2 - 4ac)ac^2 - 5\sqrt{a^2 - ab + bc} - c^2 + \sqrt{b^2 - 4ac} \\
&)(a - b + c))\sqrt{b^2 - 4ac}bc^2 - 2(b^2 - 4ac)bc^2)(\pi\text{floor}(1 \\
&/2x/\pi + 1/2) + \arctan(2\sqrt{1/2}\tan(1/2x)/\sqrt{(2a - 2c + \sqrt{-4(a \\
&+ b + c)(a - b + c) + 4(a - c)^2}))/ (a - b + c)))\text{abs}(a - b + c)/(3a^5 * \\
&b^2 - 5a^4b^3 - 6a^3b^4 + 10a^2b^5 + 3ab^6 - 5b^7 - 12a^6c + 20 * \\
&a^5bc + 47a^4b^2c - 60a^3b^3c - 46a^2b^4c + 40ab^5c + 11b^6 * \\
&c - 92a^5c^2 + 80a^4b^2c^2 + 182a^3b^2c^2 - 94a^2b^3c^2 - 78ab^4 \\
&c^2 - 6b^5c^2 - 184a^4c^3 + 56a^3b^2c^3 + 166a^2b^2c^3 + 36ab^3 * \\
&c^3 - 6b^4c^3 - 120a^3c^4 - 48a^2b^2c^4 + 23ab^2c^4 + 11b^3c^4 + \\
&4a^2c^5 - 44ab^2c^5 - 5b^2c^5 + 20ac^6) + (4a^3b^2 - 6a^2b^3 - 4 \\
&ab^4 + 6b^5 - 16a^4c + 24a^3bc + 40a^2b^2c - 44ab^3c - 8b^4 * \\
&c - 96a^3c^2 + 80a^2b^2c^2 + 52ab^2c^2 + 2b^3c^2 - 80a^2c^3 - 8a \\
& * bc^3 + 3\sqrt{a^2 - ab + bc} - c^2 - \sqrt{b^2 - 4ac}(a - b + c))a^2 * \\
&b^2 - 2\sqrt{a^2 - ab + bc} - c^2 - \sqrt{b^2 - 4ac}(a - b + c))ab^3 - \\
&5\sqrt{a^2 - ab + bc} - c^2 - \sqrt{b^2 - 4ac}(a - b + c))b^4 - 12\sqrt{a^2 \\
&- ab + bc} - c^2 - \sqrt{b^2 - 4ac}(a - b + c))a^3c + 8\sqrt{a^2 \\
&- ab + bc} - c^2 - \sqrt{b^2 - 4ac}(a - b + c))a^2bc + 34\sqrt{a^2 - \\
&ab + bc} - c^2 - \sqrt{b^2 - 4ac}(a - b + c))ab^2c + 6\sqrt{a^2 - a \\
&b + bc} - c^2 - \sqrt{b^2 - 4ac}(a - b + c))b^3c - 56\sqrt{a^2 - ab + \\
&bc} - c^2 - \sqrt{b^2 - 4ac}(a - b + c))a^2c^2 - 24\sqrt{a^2 - ab + b \\
&c} - c^2 - \sqrt{b^2 - 4ac}(a - b + c))abc^2 - 5\sqrt{a^2 - ab + bc} - \\
&c^2 - \sqrt{b^2 - 4ac}(a - b + c))b^2c^2 + 20\sqrt{a^2 - ab + bc} - c \\
&^2 - \sqrt{b^2 - 4ac}(a - b + c))ac^3 + 6\sqrt{a^2 - ab + bc} - c^2 - \\
&\sqrt{b^2 - 4ac}(a - b + c))\sqrt{b^2 - 4ac}a^3 - 4(b^2 - 4ac)a^3 \\
&- \sqrt{a^2 - ab + bc} - c^2 - \sqrt{b^2 - 4ac}(a - b + c))\sqrt{b^2 - 4 \\
&ac}a^2b + 6(b^2 - 4ac)a^2b - 12\sqrt{a^2 - ab + bc} - c^2 - \sqrt{b \\
&^2 - 4ac}(a - b + c))\sqrt{b^2 - 4ac}ab^2 + 4(b^2 - 4ac)ab^2 - \\
&5\sqrt{a^2 - ab + bc} - c^2 - \sqrt{b^2 - 4ac}(a - b + c))\sqrt{b^2 - 4 \\
&ac}b^3 - 6(b^2 - 4ac)b^3 + 28\sqrt{a^2 - ab + bc} - c^2 - \sqrt{b^2 - \\
&4ac}(a - b + c))\sqrt{b^2 - 4ac}a^2c - 24(b^2 - 4ac)a^2c + 26 * \\
&\sqrt{a^2 - ab + bc} - c^2 - \sqrt{b^2 - 4ac}(a - b + c))\sqrt{b^2 - 4ac} \\
&c)ab^3c + 20(b^2 - 4ac)ab^3c + 6\sqrt{a^2 - ab + bc} - c^2 - \sqrt{b^2 \\
&- 4ac}(a - b + c))\sqrt{b^2 - 4ac}b^2c + 8(b^2 - 4ac)b^2c - 10 \\
&\sqrt{a^2 - ab + bc} - c^2 - \sqrt{b^2 - 4ac}(a - b + c))\sqrt{b^2 - 4ac} \\
&ac^2 - 20(b^2 - 4ac)ac^2 - 5\sqrt{a^2 - ab + bc} - c^2 - \sqrt{b^2 \\
&- 4ac}(a - b + c))\sqrt{b^2 - 4ac}bc^2 - 2(b^2 - 4ac)bc^2)(p
\end{aligned}$$

```
i*floor(1/2*x/pi + 1/2) + arctan(2*sqrt(1/2)*tan(1/2*x)/sqrt((2*a - 2*c - s
qrt(-4*(a + b + c)*(a - b + c) + 4*(a - c)^2))/(a - b + c))))*abs(a - b + c
)/(3*a^5*b^2 - 5*a^4*b^3 - 6*a^3*b^4 + 10*a^2*b^5 + 3*a*b^6 - 5*b^7 - 12*a^
6*c + 20*a^5*b*c + 47*a^4*b^2*c - 60*a^3*b^3*c - 46*a^2*b^4*c + 40*a*b^5*c
+ 11*b^6*c - 92*a^5*c^2 + 80*a^4*b*c^2 + 182*a^3*b^2*c^2 - 94*a^2*b^3*c^2 -
78*a*b^4*c^2 - 6*b^5*c^2 - 184*a^4*c^3 + 56*a^3*b*c^3 + 166*a^2*b^2*c^3 +
36*a*b^3*c^3 - 6*b^4*c^3 - 120*a^3*c^4 - 48*a^2*b*c^4 + 23*a*b^2*c^4 + 11*b
^3*c^4 + 4*a^2*c^5 - 44*a*b*c^5 - 5*b^2*c^5 + 20*a*c^6)
```

## Mupad [B] (verification not implemented)

Time = 13.30 (sec) , antiderivative size = 5488, normalized size of antiderivative = 23.86

$$\int \frac{\cos(x)}{a + b \cos(x) + c \cos^2(x)} dx = \text{Too large to display}$$

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

```
[Out] atan(((tan(x/2)*(96*a*b^2 - 128*a^2*b - 64*a*c^2 + 32*b^2*c + 64*a^3 - 32*b
^3) + ((8*a^3*c + b*(-(4*a*c - b^2)^3)^(1/2) + b^4 - 2*a^2*b^2 + 8*a^2*c^2
- 6*a*b^2*c)/(2*(a^2*b^4 - b^6 + 16*a^2*c^4 + 32*a^3*c^3 + 16*a^4*c^2 + b^4
*c^2 - 8*a*b^2*c^3 - 8*a^3*b^2*c - 32*a^2*b^2*c^2 + 10*a*b^4*c)))^(1/2)*(64
*a*b^3 + 128*a*c^3 + 128*a^3*c + 64*b^3*c - 32*b^4 - 32*a^2*b^2 + 256*a^2*c
^2 - 32*b^2*c^2 + tan(x/2)*((8*a^3*c + b*(-(4*a*c - b^2)^3)^(1/2) + b^4 - 2
*a^2*b^2 + 8*a^2*c^2 - 6*a*b^2*c)/(2*(a^2*b^4 - b^6 + 16*a^2*c^4 + 32*a^3*c
^3 + 16*a^4*c^2 + b^4*c^2 - 8*a*b^2*c^3 - 8*a^3*b^2*c - 32*a^2*b^2*c^2 + 10
*a*b^4*c)))^(1/2)*(64*a*b^4 + 256*a*c^4 - 256*a^4*c - 64*b^4*c - 128*a^2*b
^3 + 64*a^3*b^2 + 256*a^2*c^3 - 256*a^3*c^2 - 64*b^2*c^3 + 128*b^3*c^2 + 192
*a*b^2*c^2 - 192*a^2*b^2*c - 512*a*b*c^3 + 512*a^3*b*c) - 256*a*b*c^2 + 64*
a*b^2*c - 256*a^2*b*c))*((8*a^3*c + b*(-(4*a*c - b^2)^3)^(1/2) + b^4 - 2*a
^2*b^2 + 8*a^2*c^2 - 6*a*b^2*c)/(2*(a^2*b^4 - b^6 + 16*a^2*c^4 + 32*a^3*c^3
+ 16*a^4*c^2 + b^4*c^2 - 8*a*b^2*c^3 - 8*a^3*b^2*c - 32*a^2*b^2*c^2 + 10*a
b^4*c)))^(1/2)*1i + (tan(x/2)*(96*a*b^2 - 128*a^2*b - 64*a*c^2 + 32*b^2*c +
64*a^3 - 32*b^3) - ((8*a^3*c + b*(-(4*a*c - b^2)^3)^(1/2) + b^4 - 2*a^2*b
^2 + 8*a^2*c^2 - 6*a*b^2*c)/(2*(a^2*b^4 - b^6 + 16*a^2*c^4 + 32*a^3*c^3 + 16
*a^4*c^2 + b^4*c^2 - 8*a*b^2*c^3 - 8*a^3*b^2*c - 32*a^2*b^2*c^2 + 10*a*b^4
*c)))^(1/2)*(64*a*b^3 + 128*a*c^3 + 128*a^3*c + 64*b^3*c - 32*b^4 - 32*a^2*b
^2 + 256*a^2*c^2 - 32*b^2*c^2 - tan(x/2)*((8*a^3*c + b*(-(4*a*c - b^2)^3)^(
1/2) + b^4 - 2*a^2*b^2 + 8*a^2*c^2 - 6*a*b^2*c)/(2*(a^2*b^4 - b^6 + 16*a^2
*c^4 + 32*a^3*c^3 + 16*a^4*c^2 + b^4*c^2 - 8*a*b^2*c^3 - 8*a^3*b^2*c - 32*a
^2*b^2*c^2 + 10*a*b^4*c)))^(1/2)*(64*a*b^4 + 256*a*c^4 - 256*a^4*c - 64*b^4
*c - 128*a^2*b^3 + 64*a^3*b^2 + 256*a^2*c^3 - 256*a^3*c^2 - 64*b^2*c^3 + 128
*b^3*c^2 + 192*a*b^2*c^2 - 192*a^2*b^2*c - 512*a*b*c^3 + 512*a^3*b*c) - 256
*a*b*c^2 + 64*a*b^2*c - 256*a^2*b*c))*((8*a^3*c + b*(-(4*a*c - b^2)^3)^(1/2
) + b^4 - 2*a^2*b^2 + 8*a^2*c^2 - 6*a*b^2*c)/(2*(a^2*b^4 - b^6 + 16*a^2*c^4
```

$$\begin{aligned} & + 32a^3c^3 + 16a^4c^2 + b^4c^2 - 8a^3b^2c^3 - 8a^3b^2c - 32a^2b^2c^2 \\ & + 10ab^4c) \bigg)^{1/2} \bigg/ (64ac - 64ab + 64a^2 - (\tan(x/2) * (96ab^2 - 128a^2b - 64ac^2 + 32b^2c + 64a^3 - 32b^3) + ((8a^3c + b \\ & * (-4ac - b^2)^3)^{1/2} + b^4 - 2a^2b^2 + 8a^2c^2 - 6ab^2c) / (2(a^2b^4 - b^6 + 16a^2c^4 + 32a^3c^3 + 16a^4c^2 + b^4c^2 - 8ab^2c^3 - \\ & 8a^3b^2c - 32a^2b^2c^2 + 10ab^4c) \bigg)^{1/2} * (64ab^3 + 128ac^3 + 128a^3c + 64b^3c - 32b^4 - 32a^2b^2 + 256a^2c^2 - 32b^2c^2 + \tan(x/2) * ((8a^3c + b * (-4ac - b^2)^3)^{1/2} + b^4 - 2a^2b^2 + 8a^2c^2 - 6ab^2c) / (2(a^2b^4 - b^6 + 16a^2c^4 + 32a^3c^3 + 16a^4c^2 + b^4c^2 - 8ab^2c^3 - 8a^3b^2c - 32a^2b^2c^2 + 10ab^4c) \bigg)^{1/2} * (64ab^3 + 128ac^3 + 128a^3c + 64b^3c - 32b^4 - 32a^2b^2 + 256a^2c^2 - 32b^2c^2 - \tan(x/2) * ((8a^3c + b * (-4ac - b^2)^3)^{1/2} + b^4 - 2a^2b^2 + 8a^2c^2 - 6ab^2c) / (2(a^2b^4 - b^6 + 16a^2c^4 + 32a^3c^3 + 16a^4c^2 + b^4c^2 - 8ab^2c^3 - 8a^3b^2c - 32a^2b^2c^2 + 10ab^4c) \bigg)^{1/2} + (\tan(x/2) * (96ab^2 - 128a^2b - 64ac^2 + 32b^2c + 64a^3 - 32b^3) - ((8a^3c + b * (-4ac - b^2)^3)^{1/2} + b^4 - 2a^2b^2 + 8a^2c^2 - 6ab^2c) / (2(a^2b^4 - b^6 + 16a^2c^4 + 32a^3c^3 + 16a^4c^2 + b^4c^2 - 8ab^2c^3 - 8a^3b^2c - 32a^2b^2c^2 + 10ab^4c) \bigg)^{1/2} * (64ab^3 + 128ac^3 + 128a^3c + 64b^3c - 32b^4 - 32a^2b^2 + 256a^2c^2 - 32b^2c^2 - \tan(x/2) * ((8a^3c + b * (-4ac - b^2)^3)^{1/2} + b^4 - 2a^2b^2 + 8a^2c^2 - 6ab^2c) / (2(a^2b^4 - b^6 + 16a^2c^4 + 32a^3c^3 + 16a^4c^2 + b^4c^2 - 8ab^2c^3 - 8a^3b^2c - 32a^2b^2c^2 + 10ab^4c) \bigg)^{1/2} * (64ab^4 + 256ac^4 - 256a^4c - 64b^4c - 128a^2b^3 + 64a^3b^2 + 256a^2c^3 - 256a^3c^2 - 64b^2c^3 + 128b^3c^2 + 192ab^2c^2 - 192a^2b^2c - 192a^2b^2c - 512abc^3 + 512a^3b^2c) - 256abc^2 + 64ab^2c - 256a^2b^2c) * ((8a^3c + b * (-4ac - b^2)^3)^{1/2} + b^4 - 2a^2b^2 + 8a^2c^2 - 6ab^2c) / (2(a^2b^4 - b^6 + 16a^2c^4 + 32a^3c^3 + 16a^4c^2 + b^4c^2 - 8ab^2c^3 - 8a^3b^2c - 32a^2b^2c^2 + 10ab^4c) \bigg)^{1/2} + (\tan(x/2) * (96ab^2 - 128a^2b - 64ac^2 + 32b^2c + 64a^3 - 32b^3) - ((8a^3c + b * (-4ac - b^2)^3)^{1/2} + b^4 - 2a^2b^2 + 8a^2c^2 - 6ab^2c) / (2(a^2b^4 - b^6 + 16a^2c^4 + 32a^3c^3 + 16a^4c^2 + b^4c^2 - 8ab^2c^3 - 8a^3b^2c - 32a^2b^2c^2 + 10ab^4c) \bigg)^{1/2} * (64ab^3 + 128ac^3 + 128a^3c + 64b^3c - 32b^4 - 32a^2b^2 + 256a^2c^2 - 32b^2c^2 - \tan(x/2) * ((8a^3c + b * (-4ac - b^2)^3)^{1/2} + b^4 - 2a^2b^2 + 8a^2c^2 - 6ab^2c) / (2(a^2b^4 - b^6 + 16a^2c^4 + 32a^3c^3 + 16a^4c^2 + b^4c^2 - 8ab^2c^3 - 8a^3b^2c - 32a^2b^2c^2 + 10ab^4c) \bigg)^{1/2} * (64ab^4 + 256ac^4 - 256a^4c - 64b^4c - 128a^2b^3 + 64a^3b^2 + 256a^2c^3 - 256a^3c^2 - 64b^2c^3 + 128b^3c^2 + 192ab^2c^2 - 192a^2b^2c - 512abc^3 + 512a^3b^2c) - 256abc^2 + 64ab^2c - 256a^2b^2c) * ((8a^3c + b * (-4ac - b^2)^3)^{1/2} + b^4 - 2a^2b^2 + 8a^2c^2 - 6ab^2c) / (2(a^2b^4 - b^6 + 16a^2c^4 + 32a^3c^3 + 16a^4c^2 + b^4c^2 - 8ab^2c^3 - 8a^3b^2c - 32a^2b^2c^2 + 10ab^4c) \bigg)^{1/2} + \operatorname{atan}(((\tan(x/2) * (96ab^2 - 128a^2b - 64ac^2 + 32b^2c + 64a^3 - 32b^3) + ((8a^3c - b * (-4ac - b^2)^3)^{1/2} + b^4 - 2a^2b^2 + 8a^2c^2 - 6ab^2c) / (2(a^2b^4 - b^6 + 16a^2c^4 + 32a^3c^3 + 16a^4c^2 + b^4c^2 - 8ab^2c^3 - 8a^3b^2c - 32a^2b^2c^2 + 10ab^4c) \bigg)^{1/2} * (64ab^3 + 128ac^3 + 128a^3c + 64b^3c - 32b^4 - 32a^2b^2 + 256a^2c^2 - 32b^2c^2 + \tan(x/2) * ((8a^3c - b * (-4ac - b^2)^3)^{1/2} + b^4 - 2a^2b^2 + 8a^2c^2 - 6ab^2c) / (2(a^2b^4 - b^6 + 16a^2c^4 + 32a^3c^3 + 16a^4c^2 + b^4c^2 - 8ab^2c^3 - 8a^3b^2c - 32a^2b^2c^2 + 10ab^4c) \bigg)^{1/2} * (64ab^4 + 256ac^4 - 256a^4c - 64b^4c - 128a^2b^3 + 64a^3b^2 + 256a^2c^3 - 256a^3c^2 - 64b^2c^3 + 128b^3c^2 + 192ab^2c^2 - 192a^2b^2c - 512abc^3 + 512a^3b^2c) - 256abc^2 + 64ab^2c - 256a^2b^2c) * ((8a^3c - b * (-4ac - b^2)^3)^{1/2} + b^4 - \end{aligned}$$

$$\begin{aligned}
& 2a^2b^2 + 8a^2c^2 - 6ab^2c) / (2(a^2b^4 - b^6 + 16a^2c^4 + 32a^3c^3 \\
& + 16a^4c^2 + b^4c^2 - 8ab^2c^3 - 8a^3b^2c - 32a^2b^2c^2 + 1 \\
& 0ab^4c))^{(1/2)} * i + (\tan(x/2) * (96ab^2 - 128a^2b - 64ac^2 + 32b^2 \\
& * c + 64a^3 - 32b^3) - ((8a^3c - b * (-4ac - b^2)^3)^{(1/2)} + b^4 - 2a^ \\
& 2b^2 + 8a^2c^2 - 6ab^2c) / (2(a^2b^4 - b^6 + 16a^2c^4 + 32a^3c^3 \\
& + 16a^4c^2 + b^4c^2 - 8ab^2c^3 - 8a^3b^2c - 32a^2b^2c^2 + 10a* \\
& b^4c))^{(1/2)} * (64ab^3 + 128ac^3 + 128a^3c + 64b^3c - 32b^4 - 32a \\
& ^2b^2 + 256a^2c^2 - 32b^2c^2 - \tan(x/2) * ((8a^3c - b * (-4ac - b^2)^ \\
& 3)^{(1/2)} + b^4 - 2a^2b^2 + 8a^2c^2 - 6ab^2c) / (2(a^2b^4 - b^6 + 16* \\
& a^2c^4 + 32a^3c^3 + 16a^4c^2 + b^4c^2 - 8ab^2c^3 - 8a^3b^2c - 3 \\
& 2a^2b^2c^2 + 10ab^4c))^{(1/2)} * (64ab^4 + 256ac^4 - 256a^4c - 64* \\
& b^4c - 128a^2b^3 + 64a^3b^2 + 256a^2c^3 - 256a^3c^2 - 64b^2c^3 + \\
& 128b^3c^2 + 192ab^2c^2 - 192a^2b^2c - 512abc^3 + 512a^3bc) - \\
& 256abc^2 + 64ab^2c - 256a^2bc) * ((8a^3c - b * (-4ac - b^2)^3)^{(1/2)} \\
& + b^4 - 2a^2b^2 + 8a^2c^2 - 6ab^2c) / (2(a^2b^4 - b^6 + 16a^2 \\
& * c^4 + 32a^3c^3 + 16a^4c^2 + b^4c^2 - 8ab^2c^3 - 8a^3b^2c - 32a \\
& ^2b^2c^2 + 10ab^4c))^{(1/2)} * i) / (64ac - 64ab + 64a^2 - (\tan(x/2) * \\
& (96ab^2 - 128a^2b - 64ac^2 + 32b^2c + 64a^3 - 32b^3) + ((8a^3c \\
& - b * (-4ac - b^2)^3)^{(1/2)} + b^4 - 2a^2b^2 + 8a^2c^2 - 6ab^2c) / (2* \\
& (a^2b^4 - b^6 + 16a^2c^4 + 32a^3c^3 + 16a^4c^2 + b^4c^2 - 8ab^2c \\
& ^3 - 8a^3b^2c - 32a^2b^2c^2 + 10ab^4c))^{(1/2)} * (64ab^3 + 128ac \\
& ^3 + 128a^3c + 64b^3c - 32b^4 - 32a^2b^2 + 256a^2c^2 - 32b^2c^2 \\
& + \tan(x/2) * ((8a^3c - b * (-4ac - b^2)^3)^{(1/2)} + b^4 - 2a^2b^2 + 8a^2 \\
& * c^2 - 6ab^2c) / (2(a^2b^4 - b^6 + 16a^2c^4 + 32a^3c^3 + 16a^4c^2 \\
& + b^4c^2 - 8ab^2c^3 - 8a^3b^2c - 32a^2b^2c^2 + 10ab^4c))^{(1/2)} \\
& ) * (64ab^4 + 256ac^4 - 256a^4c - 64b^4c - 128a^2b^3 + 64a^3b^2 + \\
& 256a^2c^3 - 256a^3c^2 - 64b^2c^3 + 128b^3c^2 + 192ab^2c^2 - 192 \\
& * a^2b^2c - 512abc^3 + 512a^3bc) - 256abc^2 + 64ab^2c - 256a^ \\
& 2bc) * ((8a^3c - b * (-4ac - b^2)^3)^{(1/2)} + b^4 - 2a^2b^2 + 8a^2c^ \\
& 2 - 6ab^2c) / (2(a^2b^4 - b^6 + 16a^2c^4 + 32a^3c^3 + 16a^4c^2 + b \\
& ^4c^2 - 8ab^2c^3 - 8a^3b^2c - 32a^2b^2c^2 + 10ab^4c))^{(1/2)} + \\
& (\tan(x/2) * (96ab^2 - 128a^2b - 64ac^2 + 32b^2c + 64a^3 - 32b^3) - \\
& ((8a^3c - b * (-4ac - b^2)^3)^{(1/2)} + b^4 - 2a^2b^2 + 8a^2c^2 - 6a \\
& * b^2c) / (2(a^2b^4 - b^6 + 16a^2c^4 + 32a^3c^3 + 16a^4c^2 + b^4c^2 \\
& - 8ab^2c^3 - 8a^3b^2c - 32a^2b^2c^2 + 10ab^4c))^{(1/2)} * (64ab^ \\
& 3 + 128ac^3 + 128a^3c + 64b^3c - 32b^4 - 32a^2b^2 + 256a^2c^2 - \\
& 32b^2c^2 - \tan(x/2) * ((8a^3c - b * (-4ac - b^2)^3)^{(1/2)} + b^4 - 2a^2* \\
& b^2 + 8a^2c^2 - 6ab^2c) / (2(a^2b^4 - b^6 + 16a^2c^4 + 32a^3c^3 + \\
& 16a^4c^2 + b^4c^2 - 8ab^2c^3 - 8a^3b^2c - 32a^2b^2c^2 + 10ab^ \\
& 4c))^{(1/2)} * (64ab^4 + 256ac^4 - 256a^4c - 64b^4c - 128a^2b^3 + 6 \\
& 4a^3b^2 + 256a^2c^3 - 256a^3c^2 - 64b^2c^3 + 128b^3c^2 + 192ab^ \\
& 2c^2 - 192a^2b^2c - 512abc^3 + 512a^3bc) - 256abc^2 + 64ab^2 \\
& * c - 256a^2bc) * ((8a^3c - b * (-4ac - b^2)^3)^{(1/2)} + b^4 - 2a^2b^2 \\
& + 8a^2c^2 - 6ab^2c) / (2(a^2b^4 - b^6 + 16a^2c^4 + 32a^3c^3 + 16* \\
& a^4c^2 + b^4c^2 - 8ab^2c^3 - 8a^3b^2c - 32a^2b^2c^2 + 10ab^4c)
\end{aligned}$$

$$\left. \left. \right. \right)^{1/2}) \left( (8a^3c - b(-4ac - b^2)^3)^{1/2} + b^4 - 2a^2b^2 + 8a^2c^2 - 6ab^2c \right) / \left( 2(a^2b^4 - b^6 + 16a^2c^4 + 32a^3c^3 + 16a^4c^2 + b^4c^2 - 8ab^2c^3 - 8a^3b^2c - 32a^2b^2c^2 + 10ab^4c) \right)^{1/2} \cdot i$$



### 3.17 $\int \frac{1}{a+b \cos(x)+c \cos^2(x)} dx$

Optimal result	265
Rubi [A] (verified)	265
Mathematica [A] (verified)	267
Maple [A] (verified)	267
Fricas [B] (verification not implemented)	268
Sympy [F(-1)]	269
Maxima [F]	270
Giac [B] (verification not implemented)	270
Mupad [B] (verification not implemented)	272

#### Optimal result

Integrand size = 14, antiderivative size = 223

$$\int \frac{1}{a+b \cos(x)+c \cos^2(x)} dx = \frac{4c \arctan\left(\frac{\sqrt{b-2c-\sqrt{b^2-4ac}} \tan\left(\frac{x}{2}\right)}{\sqrt{b+2c-\sqrt{b^2-4ac}}}\right)}{\sqrt{b^2-4ac}\sqrt{b-2c-\sqrt{b^2-4ac}}\sqrt{b+2c-\sqrt{b^2-4ac}}} - \frac{4c \arctan\left(\frac{\sqrt{b-2c+\sqrt{b^2-4ac}} \tan\left(\frac{x}{2}\right)}{\sqrt{b+2c+\sqrt{b^2-4ac}}}\right)}{\sqrt{b^2-4ac}\sqrt{b-2c+\sqrt{b^2-4ac}}\sqrt{b+2c+\sqrt{b^2-4ac}}}$$

[Out]  $4*c*\arctan((b-2*c-(-4*a*c+b^2)^(1/2))^(1/2)*\tan(1/2*x)/(b+2*c-(-4*a*c+b^2)^(1/2))^(1/2))/(-4*a*c+b^2)^(1/2)/(b-2*c-(-4*a*c+b^2)^(1/2))^(1/2)/(b+2*c-(-4*a*c+b^2)^(1/2))^(1/2)-4*c*\arctan((b-2*c+(-4*a*c+b^2)^(1/2))^(1/2)*\tan(1/2*x)/(b+2*c+(-4*a*c+b^2)^(1/2))^(1/2))/(-4*a*c+b^2)^(1/2)/(b-2*c+(-4*a*c+b^2)^(1/2))^(1/2)/(b+2*c+(-4*a*c+b^2)^(1/2))^(1/2)$

#### Rubi [A] (verified)

Time = 0.36 (sec) , antiderivative size = 223, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3,  $\frac{\text{number of rules}}{\text{integrand size}} = 0.214$ , Rules used = {3330, 2738, 211}

$$\int \frac{1}{a+b \cos(x)+c \cos^2(x)} dx = \frac{4c \arctan\left(\frac{\tan\left(\frac{x}{2}\right)\sqrt{-\sqrt{b^2-4ac}+b-2c}}{\sqrt{-\sqrt{b^2-4ac}+b+2c}}\right)}{\sqrt{b^2-4ac}\sqrt{-\sqrt{b^2-4ac}+b-2c}\sqrt{-\sqrt{b^2-4ac}+b+2c}} - \frac{4c \arctan\left(\frac{\tan\left(\frac{x}{2}\right)\sqrt{\sqrt{b^2-4ac}+b-2c}}{\sqrt{\sqrt{b^2-4ac}+b+2c}}\right)}{\sqrt{b^2-4ac}\sqrt{\sqrt{b^2-4ac}+b-2c}\sqrt{\sqrt{b^2-4ac}+b+2c}}$$

[In] Int[(a + b\*Cos[x] + c\*Cos[x]^2)^(-1), x]

[Out] (4\*c\*ArcTan[(Sqrt[b - 2\*c - Sqrt[b^2 - 4\*a\*c]]\*Tan[x/2])/Sqrt[b + 2\*c - Sqrt[b^2 - 4\*a\*c]])/(Sqrt[b^2 - 4\*a\*c]\*Sqrt[b - 2\*c - Sqrt[b^2 - 4\*a\*c]]\*Sqrt[b + 2\*c - Sqrt[b^2 - 4\*a\*c]]) - (4\*c\*ArcTan[(Sqrt[b - 2\*c + Sqrt[b^2 - 4\*a\*c]]\*Tan[x/2])/Sqrt[b + 2\*c + Sqrt[b^2 - 4\*a\*c]])/(Sqrt[b^2 - 4\*a\*c]\*Sqrt[b - 2\*c + Sqrt[b^2 - 4\*a\*c]]\*Sqrt[b + 2\*c + Sqrt[b^2 - 4\*a\*c]])

### Rule 211

Int[((a\_) + (b\_)\*(x\_)^2)^(-1), x\_Symbol] := Simp[(Rt[a/b, 2]/a)\*ArcTan[x/Rt[a/b, 2]], x] /; FreeQ[{a, b}, x] && PosQ[a/b]

### Rule 2738

Int[((a\_) + (b\_)\*sin[Pi/2 + (c\_) + (d\_)\*(x\_)])^(-1), x\_Symbol] := With[{e = FreeFactors[Tan[(c + d\*x)/2], x]}, Dist[2\*(e/d), Subst[Int[1/(a + b + (a - b)\*e^2\*x^2), x], x, Tan[(c + d\*x)/2]/e], x] /; FreeQ[{a, b, c, d}, x] && NeQ[a^2 - b^2, 0]

### Rule 3330

Int[((a\_) + cos[(d\_) + (e\_)\*(x\_)])^(n\_)\*(b\_) + cos[(d\_) + (e\_)\*(x\_)])^(n2\_)\*(c\_)^(-1), x\_Symbol] := Module[{q = Rt[b^2 - 4\*a\*c, 2]}, Dist[2\*(c/q), Int[1/(b - q + 2\*c\*Cos[d + e\*x]^n), x], x] - Dist[2\*(c/q), Int[1/(b + q + 2\*c\*Cos[d + e\*x]^n), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[n2, 2\*n] && NeQ[b^2 - 4\*a\*c, 0]

### Rubi steps

$$\begin{aligned}
 \text{integral} &= \frac{(2c) \int \frac{1}{b - \sqrt{b^2 - 4ac} + 2c \cos(x)} dx}{\sqrt{b^2 - 4ac}} - \frac{(2c) \int \frac{1}{b + \sqrt{b^2 - 4ac} + 2c \cos(x)} dx}{\sqrt{b^2 - 4ac}} \\
 &= \frac{(4c) \text{Subst} \left( \int \frac{1}{b + 2c - \sqrt{b^2 - 4ac} + (b - 2c - \sqrt{b^2 - 4ac})x^2} dx, x, \tan \left( \frac{x}{2} \right) \right)}{\sqrt{b^2 - 4ac}} \\
 &\quad - \frac{(4c) \text{Subst} \left( \int \frac{1}{b + 2c + \sqrt{b^2 - 4ac} + (b - 2c + \sqrt{b^2 - 4ac})x^2} dx, x, \tan \left( \frac{x}{2} \right) \right)}{\sqrt{b^2 - 4ac}} \\
 &= \frac{4c \arctan \left( \frac{\sqrt{b - 2c - \sqrt{b^2 - 4ac}} \tan \left( \frac{x}{2} \right)}{\sqrt{b + 2c - \sqrt{b^2 - 4ac}}} \right)}{\sqrt{b^2 - 4ac} \sqrt{b - 2c - \sqrt{b^2 - 4ac}} \sqrt{b + 2c - \sqrt{b^2 - 4ac}}} \\
 &\quad - \frac{4c \arctan \left( \frac{\sqrt{b - 2c + \sqrt{b^2 - 4ac}} \tan \left( \frac{x}{2} \right)}{\sqrt{b + 2c + \sqrt{b^2 - 4ac}}} \right)}{\sqrt{b^2 - 4ac} \sqrt{b - 2c + \sqrt{b^2 - 4ac}} \sqrt{b + 2c + \sqrt{b^2 - 4ac}}}
 \end{aligned}$$

**Mathematica [A] (verified)**

Time = 0.66 (sec) , antiderivative size = 198, normalized size of antiderivative = 0.89

$$\int \frac{1}{a + b \cos(x) + c \cos^2(x)} dx$$

$$= \frac{2\sqrt{2}c \left( \frac{\operatorname{arctanh}\left(\frac{(b-2c+\sqrt{b^2-4ac})\tan\left(\frac{x}{2}\right)}{\sqrt{-2b^2+4c(a+c)-2b\sqrt{b^2-4ac}}}\right)}{\sqrt{-b^2+2c(a+c)-b\sqrt{b^2-4ac}}} + \frac{\operatorname{arctanh}\left(\frac{(-b+2c+\sqrt{b^2-4ac})\tan\left(\frac{x}{2}\right)}{\sqrt{-2b^2+4c(a+c)+2b\sqrt{b^2-4ac}}}\right)}{\sqrt{-b^2+2c(a+c)+b\sqrt{b^2-4ac}}}\right)}{\sqrt{b^2-4ac}}$$

`[In] Integrate[(a + b*Cos[x] + c*Cos[x]^2)^(-1), x]`

```
[Out] (2*sqrt(2)*c*(ArcTanh[((b - 2*c + Sqrt[b^2 - 4*a*c])*Tan[x/2])/Sqrt[-2*b^2 + 4*c*(a + c) - 2*b*Sqrt[b^2 - 4*a*c]])/Sqrt[-b^2 + 2*c*(a + c) - b*Sqrt[b^2 - 4*a*c]] + ArcTanh[((-b + 2*c + Sqrt[b^2 - 4*a*c])*Tan[x/2])/Sqrt[-2*b^2 + 4*c*(a + c) + 2*b*Sqrt[b^2 - 4*a*c]])/Sqrt[-b^2 + 2*c*(a + c) + b*Sqrt[b^2 - 4*a*c]])/Sqrt[b^2 - 4*a*c]
```

**Maple [A] (verified)**

Time = 1.12 (sec) , antiderivative size = 204, normalized size of antiderivative = 0.91

method	result
default	$2(a - b + c) \left( \frac{(\sqrt{-4ac+b^2}+2c-b) \operatorname{arctanh}\left(\frac{(-a+b-c)\tan\left(\frac{x}{2}\right)}{\sqrt{(\sqrt{-4ac+b^2}-a+c)(a-b+c)}}}\right)}{2\sqrt{-4ac+b^2}(a-b+c)\sqrt{(\sqrt{-4ac+b^2}-a+c)(a-b+c)}} + \frac{(b-2c+\sqrt{-4ac+b^2}) \operatorname{arctan}\left(\frac{(a-b+c)\tan\left(\frac{x}{2}\right)}{\sqrt{(\sqrt{-4ac+b^2}+a-c)(a-b+c)}}}\right)}{2\sqrt{-4ac+b^2}(a-b+c)\sqrt{(\sqrt{-4ac+b^2}+a-c)(a-b+c)}} \right)$
risch	$\sum_{R=\text{RootOf}((16a^4c^2-8a^3b^2c+32c^3a^3+a^2b^4-32a^2b^2c^2+16a^2c^4+10ab^4c-8ab^2c^3-b^6+b^4c^2)-Z^4+(8a^2c^2-6ab^2c+8ac^3+b^4-2b^2c^2)-Z^2)} \dots$

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

```
[Out] 2*(a-b+c)*(1/2*((-4*a*c+b^2)^(1/2)+2*c-b)/((-4*a*c+b^2)^(1/2)/(a-b+c)/(((4*a*c+b^2)^(1/2)-a+c)*(a-b+c))^(1/2)*arctanh((-a+b-c)*tan(1/2*x)/(((4*a*c+b^2)^(1/2)-a+c)*(a-b+c))^(1/2))+1/2*(b-2*c+(-4*a*c+b^2)^(1/2))/((-4*a*c+b^2)^(1/2)/(a-b+c)/(((4*a*c+b^2)^(1/2)+a-c)*(a-b+c))^(1/2)*arctan((a-b+c)*tan(1/2*x)/(((4*a*c+b^2)^(1/2)+a-c)*(a-b+c))^(1/2)))
```

**Fricas [B] (verification not implemented)**

Leaf count of result is larger than twice the leaf count of optimal. 3493 vs.  $2(183) = 366$ .

Time = 0.52 (sec) , antiderivative size = 3493, normalized size of antiderivative = 15.66

$$\int \frac{1}{a + b \cos(x) + c \cos^2(x)} dx = \text{Too large to display}$$

[In] integrate(1/(a+b\*cos(x)+c\*cos(x)^2),x, algorithm="fricas")

[Out]  $\frac{1}{4}\sqrt{2}\sqrt{-(b^2 - 2ac - 2c^2 - (a^2b^2 - b^4 - 4ac^3 - (8a^2 - b^2)c^2 - 2(2a^3 - 3ab^2)c)\sqrt{b^2/(a^4b^2 - 2a^2b^4 + b^6 - 4ac^5 - (16a^2 - b^2)c^4 - 12(2a^3 - ab^2)c^3 - 2(8a^4 - 11a^2b^2 + b^4)c^2 + b^4)c^2 - 4(a^5 - 3a^3b^2 + 2ab^4)c)}}{(a^2b^2 - b^4 - 4ac^3 - (8a^2 - b^2)c^2 - 2(2a^3 - 3ab^2)c)}\log(b^2c\cos(x) + 2bc^2 - (4ac^4 + (8a^2 - b^2)c^3 + 2(2a^3 - 3ab^2)c^2 - (a^2b^2 - b^4)c)\sqrt{b^2/(a^4b^2 - 2a^2b^4 + b^6 - 4ac^5 - (16a^2 - b^2)c^4 - 12(2a^3 - ab^2)c^3 - 2(8a^4 - 11a^2b^2 + b^4)c^2 - 4(a^5 - 3a^3b^2 + 2ab^4)c))\cos(x) + 1/2\sqrt{2}*((a^2b^4 - b^6 + 8ac^5 + 2(12a^2 - b^2)c^4 + 6(4a^3 - 3ab^2)c^3 + (8a^4 - 22a^2b^2 + 3b^4)c^2 - 2(3a^3b^2 - 4ab^4)c)\sqrt{b^2/(a^4b^2 - 2a^2b^4 + b^6 - 4ac^5 - (16a^2 - b^2)c^4 - 12(2a^3 - ab^2)c^3 - 2(8a^4 - 11a^2b^2 + b^4)c^2 - 4(a^5 - 3a^3b^2 + 2ab^4)c)}\sin(x) + (b^4 - 4ab^2c)\sqrt{-(b^2 - 2ac - 2c^2 - (a^2b^2 - b^4 - 4ac^3 - (8a^2 - b^2)c^2 - 2(2a^3 - 3ab^2)c)\sqrt{b^2/(a^4b^2 - 2a^2b^4 + b^6 - 4ac^5 - (16a^2 - b^2)c^4 - 12(2a^3 - ab^2)c^3 - 2(8a^4 - 11a^2b^2 + b^4)c^2 - 4(a^5 - 3a^3b^2 + 2ab^4)c)}}{(a^2b^2 - b^4 - 4ac^3 - (8a^2 - b^2)c^2 - 2(2a^3 - 3ab^2)c)}\log(b^2c\cos(x) + 2bc^2 - (4ac^4 + (8a^2 - b^2)c^3 + 2(2a^3 - 3ab^2)c^2 - (a^2b^2 - b^4)c)\sqrt{b^2/(a^4b^2 - 2a^2b^4 + b^6 - 4ac^5 - (16a^2 - b^2)c^4 - 12(2a^3 - ab^2)c^3 - 2(8a^4 - 11a^2b^2 + b^4)c^2 - 4(a^5 - 3a^3b^2 + 2ab^4)c))\cos(x) - 1/2\sqrt{2}*((a^2b^4 - b^6 + 8ac^5 + 2(12a^2 - b^2)c^4 + 6(4a^3 - 3ab^2)c^3 + (8a^4 - 22a^2b^2 + 3b^4)c^2 - 2(3a^3b^2 - 4ab^4)c)\sqrt{b^2/(a^4b^2 - 2a^2b^4 + b^6 - 4ac^5 - (16a^2 - b^2)c^4 - 12(2a^3 - ab^2)c^3 - 2(8a^4 - 11a^2b^2 + b^4)c^2 - 4(a^5 - 3a^3b^2 + 2ab^4)c)}\sin(x) + (b^4 - 4ab^2c)\sqrt{-(b^2 - 2ac - 2c^2 - (a^2b^2 - b^4 - 4ac^3 - (8a^2 - b^2)c^2 - 2(2a^3 - 3ab^2)c)\sqrt{b^2/(a^4b^2 - 2a^2b^4 + b^6 - 4ac^5 - (16a^2 - b^2)c^4 - 12(2a^3 - ab^2)c^3 - 2(8a^4 - 11a^2b^2 + b^4)c^2 - 4(a^5 - 3a^3b^2 + 2ab^4)c)}}{(a^2b^2 - b^4 - 4ac^3 - (8a^2 - b^2)c^2 - 2(2a^3 - 3ab^2)c)} + 1/4\sqrt{2}\sqrt{-(b^2 - 2ac - 2c^2 - (a^2b^2 - b^4 - 4ac^3 - (8a^2 - b^2)c^2 - 2(2a^3 - 3ab^2)c)\sqrt{b^2/(a^4b^2 - 2a^2b^4 + b^6 - 4ac^5 - (16a^2 - b^2)c^4 - 12(2a^3 - ab^2)c^3 - 2(8a^4 - 11a^2b^2 + b^4)c^2 - 4(a^5 - 3a^3b^2 + 2ab^4)c)}}{(a^2b^2 - b^4 - 4ac^3 - (8a^2 - b^2)c^2 - 2(2a^3 - 3ab^2)c)}$

```

t(2)*sqrt(-(b^2 - 2*a*c - 2*c^2 + (a^2*b^2 - b^4 - 4*a*c^3 - (8*a^2 - b^2)*
c^2 - 2*(2*a^3 - 3*a*b^2)*c)*sqrt(b^2/(a^4*b^2 - 2*a^2*b^4 + b^6 - 4*a*c^5
- (16*a^2 - b^2)*c^4 - 12*(2*a^3 - a*b^2)*c^3 - 2*(8*a^4 - 11*a^2*b^2 + b^4
)*c^2 - 4*(a^5 - 3*a^3*b^2 + 2*a*b^4)*c))))/(a^2*b^2 - b^4 - 4*a*c^3 - (8*a^
2 - b^2)*c^2 - 2*(2*a^3 - 3*a*b^2)*c))*log(-b^2*c*cos(x) - 2*b*c^2 - (4*a*c
^4 + (8*a^2 - b^2)*c^3 + 2*(2*a^3 - 3*a*b^2)*c^2 - (a^2*b^2 - b^4)*c)*sqrt(
b^2/(a^4*b^2 - 2*a^2*b^4 + b^6 - 4*a*c^5 - (16*a^2 - b^2)*c^4 - 12*(2*a^3 -
a*b^2)*c^3 - 2*(8*a^4 - 11*a^2*b^2 + b^4)*c^2 - 4*(a^5 - 3*a^3*b^2 + 2*a*b
^4)*c))*cos(x) + 1/2*sqrt(2)*((a^2*b^4 - b^6 + 8*a*c^5 + 2*(12*a^2 - b^2)*c
^4 + 6*(4*a^3 - 3*a*b^2)*c^3 + (8*a^4 - 22*a^2*b^2 + 3*b^4)*c^2 - 2*(3*a^3*
b^2 - 4*a*b^4)*c)*sqrt(b^2/(a^4*b^2 - 2*a^2*b^4 + b^6 - 4*a*c^5 - (16*a^2 -
b^2)*c^4 - 12*(2*a^3 - a*b^2)*c^3 - 2*(8*a^4 - 11*a^2*b^2 + b^4)*c^2 - 4*(
a^5 - 3*a^3*b^2 + 2*a*b^4)*c))*sin(x) - (b^4 - 4*a*b^2*c)*sin(x))*sqrt(-(b^
2 - 2*a*c - 2*c^2 + (a^2*b^2 - b^4 - 4*a*c^3 - (8*a^2 - b^2)*c^2 - 2*(2*a^3
- 3*a*b^2)*c)*sqrt(b^2/(a^4*b^2 - 2*a^2*b^4 + b^6 - 4*a*c^5 - (16*a^2 - b^
2)*c^4 - 12*(2*a^3 - a*b^2)*c^3 - 2*(8*a^4 - 11*a^2*b^2 + b^4)*c^2 - 4*(a^5
- 3*a^3*b^2 + 2*a*b^4)*c))))/(a^2*b^2 - b^4 - 4*a*c^3 - (8*a^2 - b^2)*c^2 -
2*(2*a^3 - 3*a*b^2)*c))) - 1/4*sqrt(2)*sqrt(-(b^2 - 2*a*c - 2*c^2 + (a^2*b
^2 - b^4 - 4*a*c^3 - (8*a^2 - b^2)*c^2 - 2*(2*a^3 - 3*a*b^2)*c)*sqrt(b^2/(a
^4*b^2 - 2*a^2*b^4 + b^6 - 4*a*c^5 - (16*a^2 - b^2)*c^4 - 12*(2*a^3 - a*b^2
)*c^3 - 2*(8*a^4 - 11*a^2*b^2 + b^4)*c^2 - 4*(a^5 - 3*a^3*b^2 + 2*a*b^4)*c)
))/((a^2*b^2 - b^4 - 4*a*c^3 - (8*a^2 - b^2)*c^2 - 2*(2*a^3 - 3*a*b^2)*c))*1
og(-b^2*c*cos(x) - 2*b*c^2 - (4*a*c^4 + (8*a^2 - b^2)*c^3 + 2*(2*a^3 - 3*a*
b^2)*c^2 - (a^2*b^2 - b^4)*c)*sqrt(b^2/(a^4*b^2 - 2*a^2*b^4 + b^6 - 4*a*c^5
- (16*a^2 - b^2)*c^4 - 12*(2*a^3 - a*b^2)*c^3 - 2*(8*a^4 - 11*a^2*b^2 + b^
4)*c^2 - 4*(a^5 - 3*a^3*b^2 + 2*a*b^4)*c))*cos(x) - 1/2*sqrt(2)*((a^2*b^4 -
b^6 + 8*a*c^5 + 2*(12*a^2 - b^2)*c^4 + 6*(4*a^3 - 3*a*b^2)*c^3 + (8*a^4 -
22*a^2*b^2 + 3*b^4)*c^2 - 2*(3*a^3*b^2 - 4*a*b^4)*c)*sqrt(b^2/(a^4*b^2 - 2*
a^2*b^4 + b^6 - 4*a*c^5 - (16*a^2 - b^2)*c^4 - 12*(2*a^3 - a*b^2)*c^3 - 2*(
8*a^4 - 11*a^2*b^2 + b^4)*c^2 - 4*(a^5 - 3*a^3*b^2 + 2*a*b^4)*c))*sin(x) -
(b^4 - 4*a*b^2*c)*sin(x))*sqrt(-(b^2 - 2*a*c - 2*c^2 + (a^2*b^2 - b^4 - 4*a
*c^3 - (8*a^2 - b^2)*c^2 - 2*(2*a^3 - 3*a*b^2)*c)*sqrt(b^2/(a^4*b^2 - 2*a^2
*b^4 + b^6 - 4*a*c^5 - (16*a^2 - b^2)*c^4 - 12*(2*a^3 - a*b^2)*c^3 - 2*(8*a
^4 - 11*a^2*b^2 + b^4)*c^2 - 4*(a^5 - 3*a^3*b^2 + 2*a*b^4)*c))))/(a^2*b^2 -
b^4 - 4*a*c^3 - (8*a^2 - b^2)*c^2 - 2*(2*a^3 - 3*a*b^2)*c)))

```

## Sympy [F(-1)]

Timed out.

$$\int \frac{1}{a + b \cos(x) + c \cos^2(x)} dx = \text{Timed out}$$

[In] integrate(1/(a+b\*cos(x)+c\*cos(x)\*\*2),x)

[Out] Timed out

**Maxima [F]**

$$\int \frac{1}{a + b \cos(x) + c \cos^2(x)} dx = \int \frac{1}{c \cos(x)^2 + b \cos(x) + a} dx$$

[In] integrate(1/(a+b\*cos(x)+c\*cos(x)^2),x, algorithm="maxima")

[Out] integrate(1/(c\*cos(x)^2 + b\*cos(x) + a), x)

**Giac [B] (verification not implemented)**

Leaf count of result is larger than twice the leaf count of optimal. 2994 vs. 2(183) = 366.

Time = 1.46 (sec) , antiderivative size = 2994, normalized size of antiderivative = 13.43

$$\int \frac{1}{a + b \cos(x) + c \cos^2(x)} dx = \text{Too large to display}$$

[In] integrate(1/(a+b\*cos(x)+c\*cos(x)^2),x, algorithm="giac")

[Out]  $-(2a^2b^3 - 8ab^4 + 6b^5 - 8a^3b^2c + 52a^2b^2c - 44ab^3c - 4b^4c - 80a^3c^2 + 80a^2b^2c^2 + 40ab^2c^2 - 6b^3c^2 - 96a^2c^3 + 24ab^2c^3 + 4b^2c^3 - 16a^2c^4 - 3\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c))a^2b^2 + 2\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c)a^2b^3 + 5\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c)b^4 + 12\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c)a^3c - 8\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c)a^2b^2c - 34\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c)a^2b^2c - 6\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c)b^3c + 56\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c)a^2c^2 + 24\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c)a^2b^2c^2 + 5\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c)b^2c^2 - 20\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c)a^2c^3 + 3\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c)\sqrt{b^2 - 4ac}a^2b - 2(b^2 - 4ac)a^2b - 2\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c)\sqrt{b^2 - 4ac}a^2b^2 + 8(b^2 - 4ac)a^2b^2 - 5\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c)\sqrt{b^2 - 4ac}b^3 - 6(b^2 - 4ac)b^3 + 6\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c)\sqrt{b^2 - 4ac}a^2c - 20(b^2 - 4ac)a^2c + 10\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c)\sqrt{b^2 - 4ac}ab^2c + 20(b^2 - 4ac)ab^2c - 4\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c)\sqrt{b^2 - 4ac}b^2c + 4(b^2 - 4ac)b^2c + 28\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c)\sqrt{b^2 - 4ac}a^2c^2 - 24(b^2 - 4ac)a^2c^2 + 7\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c)\sqrt{b^2 - 4ac}b^2c^2 + 6(b^2 - 4ac)b^2c^2 - 10\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c)\sqrt{b^2 - 4ac}b^2c^2 + 6(b^2 - 4ac)b^2c^2 - 10\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c)\sqrt{b^2 - 4ac}b^2c^2$

$$\begin{aligned}
& (a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac})(a - b + c) \sqrt{b^2 - 4ac} \sqrt{c^3 - 4(b^2 - 4ac)c^3} \\
& \left( \pi \left\lfloor \frac{1}{2} \frac{x}{\pi} + \frac{1}{2} \right\rfloor + \arctan \left( \frac{2\sqrt{1/2} \tan(1/2x)}{\sqrt{(2a - 2c + \sqrt{-4(a+b+c)}(a-b+c) + 4(a-c)^2})} \right) \right) \\
& \left( \frac{\text{abs}(a - b + c)}{(3a^5b^2 - 5a^4b^3 - 6a^3b^4 + 10a^2b^5 + 3ab^6 - 5b^7 - 12a^6c + 20a^5bc + 47a^4b^2c - 60a^3b^3c - 46a^2b^4c + 40ab^5c + 11b^6c - 92a^5c^2 + 80a^4b^2c^2 + 182a^3b^2c^2 - 94a^2b^3c^2 - 78ab^4c^2 - 6b^5c^2 - 184a^4c^3 + 56a^3b^2c^3 + 166a^2b^2c^3 + 36ab^3c^3 - 6b^4c^3 - 120a^3c^4 - 48a^2b^2c^4 + 23ab^2c^4 + 11b^3c^4 + 4a^2c^5 - 44abc^5 - 5b^2c^5 + 20ac^6) \right) \\
& + (2a^2b^3 - 8ab^4 + 6b^5 - 8a^3bc + 52a^2b^2c - 44ab^3c - 4b^4c - 80a^3c^2 + 80a^2b^2c^2 + 40ab^2c^2 - 6b^3c^2 - 96a^2c^3 + 24abc^3 + 4b^2c^3 - 16ac^4 + 3\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c)) \\
& \left( a^2b^2 - 2\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c) \right) ab^3 - 5\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c) b^4 \\
& - 12\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c) a^3c + 8\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c) a^2bc \\
& + 34\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c) ab^2c + 6\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c) b^3c \\
& - 56\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c) a^2c^2 - 24\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c) abc^2 \\
& - 5\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c) b^2c^2 + 20\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c) ac^3 \\
& + 3\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c) \sqrt{b^2 - 4ac} a^2b - 2(b^2 - 4ac) a^2b - 2\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c) \sqrt{b^2 - 4ac} ab^2 \\
& + 8(b^2 - 4ac) ab^2 - 5\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c) \sqrt{b^2 - 4ac} b^3 - 6(b^2 - 4ac) b^3 \\
& + 6\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c) \sqrt{b^2 - 4ac} a^2c - 20(b^2 - 4ac) a^2c + 10\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c) \sqrt{b^2 - 4ac} abc \\
& + 20(b^2 - 4ac) abc - 4\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c) \sqrt{b^2 - 4ac} b^2c + 4(b^2 - 4ac) b^2c \\
& + 28\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c) \sqrt{b^2 - 4ac} ac^2 - 24(b^2 - 4ac) ac^2 + 7\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c) \sqrt{b^2 - 4ac} b^2c^2 \\
& + 6(b^2 - 4ac) b^2c^2 - 10\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c) \sqrt{b^2 - 4ac} c^3 - 4(b^2 - 4ac) c^3 \\
& \left( \pi \left\lfloor \frac{1}{2} \frac{x}{\pi} + \frac{1}{2} \right\rfloor + \arctan \left( \frac{2\sqrt{1/2} \tan(1/2x)}{\sqrt{(2a - 2c - \sqrt{-4(a+b+c)}(a-b+c) + 4(a-c)^2})} \right) \right) \\
& \left( \frac{\text{abs}(a - b + c)}{(3a^5b^2 - 5a^4b^3 - 6a^3b^4 + 10a^2b^5 + 3ab^6 - 5b^7 - 12a^6c + 20a^5bc + 47a^4b^2c - 60a^3b^3c - 46a^2b^4c + 40ab^5c + 11b^6c - 92a^5c^2 + 80a^4b^2c^2 + 182a^3b^2c^2 - 94a^2b^3c^2 - 78ab^4c^2 - 6b^5c^2 - 184a^4c^3 + 56a^3b^2c^3 + 166a^2b^2c^3 + 36ab^3c^3 - 6b^4c^3 - 120a^3c^4 - 48a^2b^2c^4 + 23ab^2c^4 + 11b^3c^4 + 4a^2c^5 - 44abc^5 - 5b^2c^5 + 20ac^6) \right)
\end{aligned}$$

## Mupad [B] (verification not implemented)

Time = 13.76 (sec) , antiderivative size = 5514, normalized size of antiderivative = 24.73

$$\int \frac{1}{a + b \cos(x) + c \cos^2(x)} dx = \text{Too large to display}$$

[In] int(1/(a + b\*cos(x) + c\*cos(x)^2),x)

```
[Out] - atan(((tan(x/2)*(32*a*b^2 - 64*a^2*c - 128*b*c^2 + 96*b^2*c - 32*b^3 + 64
*c^3) + (-(8*a*c^3 + b*(-(4*a*c - b^2)^3)^(1/2) + b^4 + 8*a^2*c^2 - 2*b^2*c
^2 - 6*a*b^2*c)/(2*(a^2*b^4 - b^6 + 16*a^2*c^4 + 32*a^3*c^3 + 16*a^4*c^2 +
b^4*c^2 - 8*a*b^2*c^3 - 8*a^3*b^2*c - 32*a^2*b^2*c^2 + 10*a*b^4*c)))^(1/2)*
(64*a*b^3 + 128*a*c^3 + 128*a^3*c + 64*b^3*c - 32*b^4 - 32*a^2*b^2 + 256*a^
2*c^2 - 32*b^2*c^2 + tan(x/2)*(-(8*a*c^3 + b*(-(4*a*c - b^2)^3)^(1/2) + b^4
+ 8*a^2*c^2 - 2*b^2*c^2 - 6*a*b^2*c)/(2*(a^2*b^4 - b^6 + 16*a^2*c^4 + 32*a
^3*c^3 + 16*a^4*c^2 + b^4*c^2 - 8*a*b^2*c^3 - 8*a^3*b^2*c - 32*a^2*b^2*c^2
+ 10*a*b^4*c)))^(1/2)*(64*a*b^4 + 256*a*c^4 - 256*a^4*c - 64*b^4*c - 128*a^
2*b^3 + 64*a^3*b^2 + 256*a^2*c^3 - 256*a^3*c^2 - 64*b^2*c^3 + 128*b^3*c^2 +
192*a*b^2*c^2 - 192*a^2*b^2*c - 512*a*b*c^3 + 512*a^3*b*c) - 256*a*b*c^2 +
64*a*b^2*c - 256*a^2*b*c))*(-(8*a*c^3 + b*(-(4*a*c - b^2)^3)^(1/2) + b^4 +
8*a^2*c^2 - 2*b^2*c^2 - 6*a*b^2*c)/(2*(a^2*b^4 - b^6 + 16*a^2*c^4 + 32*a^3
*c^3 + 16*a^4*c^2 + b^4*c^2 - 8*a*b^2*c^3 - 8*a^3*b^2*c - 32*a^2*b^2*c^2 +
10*a*b^4*c)))^(1/2)*1i + (tan(x/2)*(32*a*b^2 - 64*a^2*c - 128*b*c^2 + 96*b^
2*c - 32*b^3 + 64*c^3) - (-(8*a*c^3 + b*(-(4*a*c - b^2)^3)^(1/2) + b^4 + 8*
a^2*c^2 - 2*b^2*c^2 - 6*a*b^2*c)/(2*(a^2*b^4 - b^6 + 16*a^2*c^4 + 32*a^3*c^
3 + 16*a^4*c^2 + b^4*c^2 - 8*a*b^2*c^3 - 8*a^3*b^2*c - 32*a^2*b^2*c^2 + 10*
a*b^4*c)))^(1/2)*(64*a*b^3 + 128*a*c^3 + 128*a^3*c + 64*b^3*c - 32*b^4 - 32
*a^2*b^2 + 256*a^2*c^2 - 32*b^2*c^2 - tan(x/2)*(-(8*a*c^3 + b*(-(4*a*c - b^
2)^3)^(1/2) + b^4 + 8*a^2*c^2 - 2*b^2*c^2 - 6*a*b^2*c)/(2*(a^2*b^4 - b^6 +
16*a^2*c^4 + 32*a^3*c^3 + 16*a^4*c^2 + b^4*c^2 - 8*a*b^2*c^3 - 8*a^3*b^2*c
- 32*a^2*b^2*c^2 + 10*a*b^4*c)))^(1/2)*(64*a*b^4 + 256*a*c^4 - 256*a^4*c -
64*b^4*c - 128*a^2*b^3 + 64*a^3*b^2 + 256*a^2*c^3 - 256*a^3*c^2 - 64*b^2*c^
3 + 128*b^3*c^2 + 192*a*b^2*c^2 - 192*a^2*b^2*c - 512*a*b*c^3 + 512*a^3*b*c
) - 256*a*b*c^2 + 64*a*b^2*c - 256*a^2*b*c))*(-(8*a*c^3 + b*(-(4*a*c - b^2)
^3)^(1/2) + b^4 + 8*a^2*c^2 - 2*b^2*c^2 - 6*a*b^2*c)/(2*(a^2*b^4 - b^6 + 16
*a^2*c^4 + 32*a^3*c^3 + 16*a^4*c^2 + b^4*c^2 - 8*a*b^2*c^3 - 8*a^3*b^2*c -
32*a^2*b^2*c^2 + 10*a*b^4*c)))^(1/2)*1i)/(64*a*c - 64*b*c + 64*c^2 + (tan(x
/2)*(32*a*b^2 - 64*a^2*c - 128*b*c^2 + 96*b^2*c - 32*b^3 + 64*c^3) + (-(8*a
*c^3 + b*(-(4*a*c - b^2)^3)^(1/2) + b^4 + 8*a^2*c^2 - 2*b^2*c^2 - 6*a*b^2*c
)/(2*(a^2*b^4 - b^6 + 16*a^2*c^4 + 32*a^3*c^3 + 16*a^4*c^2 + b^4*c^2 - 8*a*
b^2*c^3 - 8*a^3*b^2*c - 32*a^2*b^2*c^2 + 10*a*b^4*c)))^(1/2)*(64*a*b^3 + 12
8*a*c^3 + 128*a^3*c + 64*b^3*c - 32*b^4 - 32*a^2*b^2 + 256*a^2*c^2 - 32*b^2
*c^2 + tan(x/2)*(-(8*a*c^3 + b*(-(4*a*c - b^2)^3)^(1/2) + b^4 + 8*a^2*c^2 -
2*b^2*c^2 - 6*a*b^2*c)/(2*(a^2*b^4 - b^6 + 16*a^2*c^4 + 32*a^3*c^3 + 16*a^

```



$$\begin{aligned}
& 4c^2 + b^4c^2 - 8ab^2c^3 - 8a^3b^2c - 32a^2b^2c^2 + 10ab^4c) \\
& )^{(1/2)}(64ab^4 + 256a^4c - 256a^4c - 64b^4c - 128a^2b^3 + 64a^3 \\
& *b^2 + 256a^2c^3 - 256a^3c^2 - 64b^2c^3 + 128b^3c^2 + 192ab^2c^2 \\
& - 192a^2b^2c - 512ab^2c^3 + 512a^3b^2c) - 256ab^2c^2 + 64ab^2c - \\
& 256a^2b^2c) * (- (8a^3c^3 + b * (- (4a^3c - b^2)^3)^{(1/2)} + b^4 + 8a^2c^2 - 2 \\
& *b^2c^2 - 6ab^2c) / (2 * (a^2b^4 - b^6 + 16a^2c^4 + 32a^3c^3 + 16a^4c \\
& c^2 + b^4c^2 - 8ab^2c^3 - 8a^3b^2c - 32a^2b^2c^2 + 10ab^4c)))^{(1/2)} - (\tan(x/2) * (32ab^2 - 64a^2c - 128b^2c^2 + 96b^2c - 32b^3 + 64 \\
& *c^3) - (- (8a^3c^3 + b * (- (4a^3c - b^2)^3)^{(1/2)} + b^4 + 8a^2c^2 - 2b^2c \\
& ^2 - 6ab^2c) / (2 * (a^2b^4 - b^6 + 16a^2c^4 + 32a^3c^3 + 16a^4c^2 + \\
& b^4c^2 - 8ab^2c^3 - 8a^3b^2c - 32a^2b^2c^2 + 10ab^4c)))^{(1/2)} * \\
& (64ab^3 + 128a^3c^3 + 128a^3c + 64b^3c - 32b^4 - 32a^2b^2 + 256a^2 \\
& 2c^2 - 32b^2c^2 - \tan(x/2) * (- (8a^3c^3 + b * (- (4a^3c - b^2)^3)^{(1/2)} + b^4 \\
& + 8a^2c^2 - 2b^2c^2 - 6ab^2c) / (2 * (a^2b^4 - b^6 + 16a^2c^4 + 32a^3 \\
& ^3c^3 + 16a^4c^2 + b^4c^2 - 8ab^2c^3 - 8a^3b^2c - 32a^2b^2c^2 \\
& + 10ab^4c)))^{(1/2)} * (64ab^4 + 256a^4c - 256a^4c - 64b^4c - 128a^ \\
& 2b^3 + 64a^3b^2 + 256a^2c^3 - 256a^3c^2 - 64b^2c^3 + 128b^3c^2 + \\
& 192ab^2c^2 - 192a^2b^2c - 512ab^2c^3 + 512a^3b^2c) - 256ab^2c^2 + \\
& 64ab^2c - 256a^2b^2c) * (- (8a^3c^3 + b * (- (4a^3c - b^2)^3)^{(1/2)} + b^4 + \\
& 8a^2c^2 - 2b^2c^2 - 6ab^2c) / (2 * (a^2b^4 - b^6 + 16a^2c^4 + 32a^3 \\
& c^3 + 16a^4c^2 + b^4c^2 - 8ab^2c^3 - 8a^3b^2c - 32a^2b^2c^2 + 10ab \\
& ^4c)))^{(1/2)} * (- (8a^3c^3 + b * (- (4a^3c - b^2)^3)^{(1/2)} + b^4 + 8a^2 \\
& *c^2 - 2b^2c^2 - 6ab^2c) / (2 * (a^2b^4 - b^6 + 16a^2c^4 + 32a^3c^3 + \\
& 16a^4c^2 + b^4c^2 - 8ab^2c^3 - 8a^3b^2c - 32a^2b^2c^2 + 10ab \\
& ^4c)))^{(1/2)} * 2i - \operatorname{atan}(((\tan(x/2) * (32ab^2 - 64a^2c - 128b^2c^2 + 96b^ \\
& 2c - 32b^3 + 64c^3) + (- (8a^3c^3 - b * (- (4a^3c - b^2)^3)^{(1/2)} + b^4 + 8 \\
& a^2c^2 - 2b^2c^2 - 6ab^2c) / (2 * (a^2b^4 - b^6 + 16a^2c^4 + 32a^3c^ \\
& 3 + 16a^4c^2 + b^4c^2 - 8ab^2c^3 - 8a^3b^2c - 32a^2b^2c^2 + 10 \\
& ab^4c)))^{(1/2)} * (64ab^3 + 128a^3c^3 + 128a^3c + 64b^3c - 32b^4 - 32 \\
& *a^2b^2 + 256a^2c^2 - 32b^2c^2 + \tan(x/2) * (- (8a^3c^3 - b * (- (4a^3c - b^ \\
& 2)^3)^{(1/2)} + b^4 + 8a^2c^2 - 2b^2c^2 - 6ab^2c) / (2 * (a^2b^4 - b^6 + \\
& 16a^2c^4 + 32a^3c^3 + 16a^4c^2 + b^4c^2 - 8ab^2c^3 - 8a^3b^2c \\
& - 32a^2b^2c^2 + 10ab^4c)))^{(1/2)} * (64ab^4 + 256a^4c - 256a^4c - \\
& 64b^4c - 128a^2b^3 + 64a^3b^2 + 256a^2c^3 - 256a^3c^2 - 64b^2c^ \\
& 3 + 128b^3c^2 + 192ab^2c^2 - 192a^2b^2c - 512ab^2c^3 + 512a^3b^2c \\
& ) - 256ab^2c^2 + 64ab^2c - 256a^2b^2c) * (- (8a^3c^3 - b * (- (4a^3c - b^2) \\
& ^3)^{(1/2)} + b^4 + 8a^2c^2 - 2b^2c^2 - 6ab^2c) / (2 * (a^2b^4 - b^6 + 16 \\
& *a^2c^4 + 32a^3c^3 + 16a^4c^2 + b^4c^2 - 8ab^2c^3 - 8a^3b^2c - \\
& 32a^2b^2c^2 + 10ab^4c)))^{(1/2)} * 1i + (\tan(x/2) * (32ab^2 - 64a^2c - \\
& 128b^2c^2 + 96b^2c - 32b^3 + 64c^3) - (- (8a^3c^3 - b * (- (4a^3c - b^2) \\
& ^3)^{(1/2)} + b^4 + 8a^2c^2 - 2b^2c^2 - 6ab^2c) / (2 * (a^2b^4 - b^6 + 16a^ \\
& 2c^4 + 32a^3c^3 + 16a^4c^2 + b^4c^2 - 8ab^2c^3 - 8a^3b^2c - 32 \\
& a^2b^2c^2 + 10ab^4c)))^{(1/2)} * (64ab^3 + 128a^3c^3 + 128a^3c + 64b^ \\
& 3c - 32b^4 - 32a^2b^2 + 256a^2c^2 - 32b^2c^2 - \tan(x/2) * (- (8a^3c^3 \\
& - b * (- (4a^3c - b^2)^3)^{(1/2)} + b^4 + 8a^2c^2 - 2b^2c^2 - 6ab^2c) / (2 *
\end{aligned}$$

$$\begin{aligned}
& (a^2b^4 - b^6 + 16a^2c^4 + 32a^3c^3 + 16a^4c^2 + b^4c^2 - 8ab^2c^3 - 8a^3b^2c - 32a^2b^2c^2 + 10ab^4c))^{(1/2)} \cdot (64ab^4 + 256a^4c^4 - 256a^4c - 64b^4c - 128a^2b^3 + 64a^3b^2 + 256a^2c^3 - 256a^3c^2 - 64b^2c^3 + 128b^3c^2 + 192ab^2c^2 - 192a^2b^2c - 512ab^3c^3 + 512a^3b^3c) - 256ab^2c^2 + 64ab^2c - 256a^2b^2c) \cdot (- (8a^3c^3 - b^4 - 8a^2c^2 - 2b^2c^2 - 6ab^2c) / (2(a^2b^4 - b^6 + 16a^2c^4 + 32a^3c^3 + 16a^4c^2 + b^4c^2 - 8ab^2c^3 - 8a^3b^2c - 32a^2b^2c^2 + 10ab^4c)))^{(1/2)} + b^4 + 8a^2c^2 - 2b^2c^2 - 6ab^2c) / (2(a^2b^4 - b^6 + 16a^2c^4 + 32a^3c^3 + 16a^4c^2 + b^4c^2 - 8ab^2c^3 - 8a^3b^2c - 32a^2b^2c^2 + 10ab^4c)))^{(1/2)} \cdot i) / (64ac - 64b^2c + 64c^2 + (\tan(x/2) \cdot (32ab^2 - 64a^2c - 128b^2c^2 + 96b^2c - 32b^3 + 64c^3) + (- (8a^3c^3 - b^4 - 8a^2c^2 - 2b^2c^2 - 6ab^2c) / (2(a^2b^4 - b^6 + 16a^2c^4 + 32a^3c^3 + 16a^4c^2 + b^4c^2 - 8ab^2c^3 - 8a^3b^2c - 32a^2b^2c^2 + 10ab^4c)))^{(1/2)} + b^4 + 8a^2c^2 - 2b^2c^2 - 6ab^2c) / (2(a^2b^4 - b^6 + 16a^2c^4 + 32a^3c^3 + 16a^4c^2 + b^4c^2 - 8ab^2c^3 - 8a^3b^2c - 32a^2b^2c^2 + 10ab^4c)))^{(1/2)} \cdot (64ab^3 + 128a^3c^3 + 128a^3c + 64b^3c - 32b^4 - 32a^2b^2 + 256a^2c^2 - 32b^2c^2 + \tan(x/2) \cdot (- (8a^3c^3 - b^4 - 8a^2c^2 - 2b^2c^2 - 6ab^2c) / (2(a^2b^4 - b^6 + 16a^2c^4 + 32a^3c^3 + 16a^4c^2 + b^4c^2 - 8ab^2c^3 - 8a^3b^2c - 32a^2b^2c^2 + 10ab^4c)))^{(1/2)} + b^4 + 8a^2c^2 - 2b^2c^2 - 6ab^2c) / (2(a^2b^4 - b^6 + 16a^2c^4 + 32a^3c^3 + 16a^4c^2 + b^4c^2 - 8ab^2c^3 - 8a^3b^2c - 32a^2b^2c^2 + 10ab^4c)))^{(1/2)} \cdot (64ab^4 + 256a^4c^4 - 256a^4c - 64b^4c - 128a^2b^3 + 64a^3b^2 + 256a^2c^3 - 256a^3c^2 - 64b^2c^3 + 128b^3c^2 + 192ab^2c^2 - 192a^2b^2c - 512ab^3c^3 + 512a^3b^3c) - 256ab^2c^2 + 64ab^2c - 256a^2b^2c) \cdot (- (8a^3c^3 - b^4 - 8a^2c^2 - 2b^2c^2 - 6ab^2c) / (2(a^2b^4 - b^6 + 16a^2c^4 + 32a^3c^3 + 16a^4c^2 + b^4c^2 - 8ab^2c^3 - 8a^3b^2c - 32a^2b^2c^2 + 10ab^4c)))^{(1/2)} - (\tan(x/2) \cdot (32ab^2 - 64a^2c - 128b^2c^2 + 96b^2c - 32b^3 + 64c^3) - (- (8a^3c^3 - b^4 - 8a^2c^2 - 2b^2c^2 - 6ab^2c) / (2(a^2b^4 - b^6 + 16a^2c^4 + 32a^3c^3 + 16a^4c^2 + b^4c^2 - 8ab^2c^3 - 8a^3b^2c - 32a^2b^2c^2 + 10ab^4c)))^{(1/2)} + b^4 + 8a^2c^2 - 2b^2c^2 - 6ab^2c) / (2(a^2b^4 - b^6 + 16a^2c^4 + 32a^3c^3 + 16a^4c^2 + b^4c^2 - 8ab^2c^3 - 8a^3b^2c - 32a^2b^2c^2 + 10ab^4c)))^{(1/2)} \cdot (64ab^3 + 128a^3c^3 + 128a^3c + 64b^3c - 32b^4 - 32a^2b^2 + 256a^2c^2 - 32b^2c^2 - \tan(x/2) \cdot (- (8a^3c^3 - b^4 - 8a^2c^2 - 2b^2c^2 - 6ab^2c) / (2(a^2b^4 - b^6 + 16a^2c^4 + 32a^3c^3 + 16a^4c^2 + b^4c^2 - 8ab^2c^3 - 8a^3b^2c - 32a^2b^2c^2 + 10ab^4c)))^{(1/2)} + b^4 + 8a^2c^2 - 2b^2c^2 - 6ab^2c) / (2(a^2b^4 - b^6 + 16a^2c^4 + 32a^3c^3 + 16a^4c^2 + b^4c^2 - 8ab^2c^3 - 8a^3b^2c - 32a^2b^2c^2 + 10ab^4c)))^{(1/2)} \cdot (64ab^4 + 256a^4c^4 - 256a^4c - 64b^4c - 128a^2b^3 + 64a^3b^2 + 256a^2c^3 - 256a^3c^2 - 64b^2c^3 + 128b^3c^2 + 192ab^2c^2 - 192a^2b^2c - 512ab^3c^3 + 512a^3b^3c) - 256ab^2c^2 + 64ab^2c - 256a^2b^2c) \cdot (- (8a^3c^3 - b^4 - 8a^2c^2 - 2b^2c^2 - 6ab^2c) / (2(a^2b^4 - b^6 + 16a^2c^4 + 32a^3c^3 + 16a^4c^2 + b^4c^2 - 8ab^2c^3 - 8a^3b^2c - 32a^2b^2c^2 + 10ab^4c)))^{(1/2)} + b^4 + 8a^2c^2 - 2b^2c^2 - 6ab^2c) / (2(a^2b^4 - b^6 + 16a^2c^4 + 32a^3c^3 + 16a^4c^2 + b^4c^2 - 8ab^2c^3 - 8a^3b^2c - 32a^2b^2c^2 + 10ab^4c)))^{(1/2)} \cdot i) \cdot (- (8a^3c^3 - b^4 - 8a^2c^2 - 2b^2c^2 - 6ab^2c) / (2(a^2b^4 - b^6 + 16a^2c^4 + 32a^3c^3 + 16a^4c^2 + b^4c^2 - 8ab^2c^3 - 8a^3b^2c - 32a^2b^2c^2 + 10ab^4c)))^{(1/2)} + b^4 + 8a^2c^2 - 2b^2c^2 - 6ab^2c) / (2(a^2b^4 - b^6 + 16a^2c^4 + 32a^3c^3 + 16a^4c^2 + b^4c^2 - 8ab^2c^3 - 8a^3b^2c - 32a^2b^2c^2 + 10ab^4c)))^{(1/2)} \cdot i)
\end{aligned}$$

### 3.18 $\int \frac{\sec(x)}{a+b \cos(x)+c \cos^2(x)} dx$

Optimal result	275
Rubi [A] (verified)	275
Mathematica [A] (verified)	278
Maple [A] (verified)	278
Fricas [B] (verification not implemented)	279
Sympy [F]	279
Maxima [F]	279
Giac [B] (verification not implemented)	280
Mupad [B] (verification not implemented)	284

#### Optimal result

Integrand size = 17, antiderivative size = 245

$$\int \frac{\sec(x)}{a+b \cos(x)+c \cos^2(x)} dx = -\frac{2c\left(1+\frac{b}{\sqrt{b^2-4ac}}\right) \arctan\left(\frac{\sqrt{b-2c-\sqrt{b^2-4ac}} \tan\left(\frac{x}{2}\right)}{\sqrt{b+2c-\sqrt{b^2-4ac}}}\right)}{a\sqrt{b-2c-\sqrt{b^2-4ac}}\sqrt{b+2c-\sqrt{b^2-4ac}}} - \frac{2c\left(1-\frac{b}{\sqrt{b^2-4ac}}\right) \arctan\left(\frac{\sqrt{b-2c+\sqrt{b^2-4ac}} \tan\left(\frac{x}{2}\right)}{\sqrt{b+2c+\sqrt{b^2-4ac}}}\right)}{a\sqrt{b-2c+\sqrt{b^2-4ac}}\sqrt{b+2c+\sqrt{b^2-4ac}}} + \frac{\operatorname{arctanh}(\sin(x))}{a}$$

[Out]  $\operatorname{arctanh}(\sin(x))/a-2*c*\arctan((b-2*c-(-4*a*c+b^2)^{(1/2)})^{(1/2)}*\tan(1/2*x)/(b+2*c-(-4*a*c+b^2)^{(1/2)})^{(1/2)}*(1+b/(-4*a*c+b^2)^{(1/2)})/a/(b-2*c-(-4*a*c+b^2)^{(1/2)})^{(1/2)})/(b+2*c-(-4*a*c+b^2)^{(1/2)})^{(1/2)}-2*c*\arctan((b-2*c+(-4*a*c+b^2)^{(1/2)})^{(1/2)}*\tan(1/2*x)/(b+2*c+(-4*a*c+b^2)^{(1/2)})^{(1/2)}*(1-b/(-4*a*c+b^2)^{(1/2)})/a/(b-2*c+(-4*a*c+b^2)^{(1/2)})^{(1/2)})/(b+2*c+(-4*a*c+b^2)^{(1/2)})^{(1/2)}$

#### Rubi [A] (verified)

Time = 0.80 (sec) , antiderivative size = 245, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5,  $\frac{\text{number of rules}}{\text{integrand size}} = 0.294$ , Rules used

= {3338, 3374, 2738, 211, 3855}

$$\int \frac{\sec(x)}{a + b \cos(x) + c \cos^2(x)} dx = -\frac{2c \left( \frac{b}{\sqrt{b^2 - 4ac}} + 1 \right) \arctan \left( \frac{\tan(\frac{x}{2}) \sqrt{-\sqrt{b^2 - 4ac} + b - 2c}}{\sqrt{-\sqrt{b^2 - 4ac} + b + 2c}} \right)}{a \sqrt{-\sqrt{b^2 - 4ac} + b - 2c} \sqrt{-\sqrt{b^2 - 4ac} + b + 2c}} - \frac{2c \left( 1 - \frac{b}{\sqrt{b^2 - 4ac}} \right) \arctan \left( \frac{\tan(\frac{x}{2}) \sqrt{\sqrt{b^2 - 4ac} + b - 2c}}{\sqrt{\sqrt{b^2 - 4ac} + b + 2c}} \right)}{a \sqrt{\sqrt{b^2 - 4ac} + b - 2c} \sqrt{\sqrt{b^2 - 4ac} + b + 2c}} + \frac{\operatorname{arctanh}(\sin(x))}{a}$$

[In] Int[Sec[x]/(a + b\*Cos[x] + c\*Cos[x]^2), x]

[Out] (-2\*c\*(1 + b/Sqrt[b^2 - 4\*a\*c])\*ArcTan[(Sqrt[b - 2\*c - Sqrt[b^2 - 4\*a\*c]]\*Tan[x/2])/Sqrt[b + 2\*c - Sqrt[b^2 - 4\*a\*c]])/(a\*Sqrt[b - 2\*c - Sqrt[b^2 - 4\*a\*c]]\*Sqrt[b + 2\*c - Sqrt[b^2 - 4\*a\*c]]) - (2\*c\*(1 - b/Sqrt[b^2 - 4\*a\*c])\*ArcTan[(Sqrt[b - 2\*c + Sqrt[b^2 - 4\*a\*c]]\*Tan[x/2])/Sqrt[b + 2\*c + Sqrt[b^2 - 4\*a\*c]])/(a\*Sqrt[b - 2\*c + Sqrt[b^2 - 4\*a\*c]]\*Sqrt[b + 2\*c + Sqrt[b^2 - 4\*a\*c]]) + ArcTanh[Sin[x]]/a

#### Rule 211

Int[((a\_) + (b\_)\*(x\_)^2)^(-1), x\_Symbol] := Simp[(Rt[a/b, 2]/a)\*ArcTan[x/Rt[a/b, 2]], x] /; FreeQ[{a, b}, x] && PosQ[a/b]

#### Rule 2738

Int[((a\_) + (b\_)\*sin[Pi/2 + (c\_) + (d\_)\*(x\_)])^(-1), x\_Symbol] := With[{e = FreeFactors[Tan[(c + d\*x)/2], x]}, Dist[2\*(e/d), Subst[Int[1/(a + b + (a - b)\*e^2\*x^2), x], x, Tan[(c + d\*x)/2]/e], x]] /; FreeQ[{a, b, c, d}, x] && NeQ[a^2 - b^2, 0]

#### Rule 3338

Int[cos[(d\_) + (e\_)\*(x\_)]^(m\_)\*((a\_) + cos[(d\_) + (e\_)\*(x\_)]^(n\_)\*(b\_) + cos[(d\_) + (e\_)\*(x\_)]^(n2\_)\*(c\_))^(p\_), x\_Symbol] := Int[ExpandTrig[cos[d + e\*x]^m\*(a + b\*cos[d + e\*x]^n + c\*cos[d + e\*x]^(2\*n))^p, x], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[n2, 2\*n] && NeQ[b^2 - 4\*a\*c, 0] && IntegersQ[m, n, p]

#### Rule 3374

Int[(cos[(d\_) + (e\_)\*(x\_)]\*(B\_) + (A\_))/((a\_) + cos[(d\_) + (e\_)\*(x\_)]\*(b\_) + cos[(d\_) + (e\_)\*(x\_)]^2\*(c\_)), x\_Symbol] := Module[{q = Rt[b^2 - 4\*a\*c, 2]}, Dist[B + (b\*B - 2\*A\*c)/q, Int[1/(b + q + 2\*c\*Cos[d + e\*x]), x], x] + Dist[B - (b\*B - 2\*A\*c)/q, Int[1/(b - q + 2\*c\*Cos[d + e\*x]), x], x]]

;/ FreeQ[{a, b, c, d, e, A, B}, x] && NeQ[b^2 - 4\*a\*c, 0]

### Rule 3855

Int[csc[(c\_.) + (d\_.)\*(x\_.)], x\_Symbol] := Simp[-ArcTanh[Cos[c + d\*x]]/d, x]  
 /; FreeQ[{c, d}, x]

### Rubi steps

$$\begin{aligned}
 \text{integral} &= \int \left( \frac{-b - c \cos(x)}{a(a + b \cos(x) + c \cos^2(x))} + \frac{\sec(x)}{a} \right) dx \\
 &= \frac{\int \frac{-b - c \cos(x)}{a + b \cos(x) + c \cos^2(x)} dx}{a} + \frac{\int \sec(x) dx}{a} \\
 &= \frac{\operatorname{arctanh}(\sin(x))}{a} - \frac{\left( c \left( 1 - \frac{b}{\sqrt{b^2 - 4ac}} \right) \right) \int \frac{1}{b + \sqrt{b^2 - 4ac} + 2c \cos(x)} dx}{a} \\
 &\quad - \frac{\left( c \left( 1 + \frac{b}{\sqrt{b^2 - 4ac}} \right) \right) \int \frac{1}{b - \sqrt{b^2 - 4ac} + 2c \cos(x)} dx}{a} \\
 &= \frac{\operatorname{arctanh}(\sin(x))}{a} \\
 &\quad - \frac{\left( 2c \left( 1 - \frac{b}{\sqrt{b^2 - 4ac}} \right) \right) \operatorname{Subst} \left( \int \frac{1}{b + 2c + \sqrt{b^2 - 4ac} + (b - 2c + \sqrt{b^2 - 4ac})x^2} dx, x, \tan \left( \frac{x}{2} \right) \right)}{a} \\
 &\quad - \frac{\left( 2c \left( 1 + \frac{b}{\sqrt{b^2 - 4ac}} \right) \right) \operatorname{Subst} \left( \int \frac{1}{b + 2c - \sqrt{b^2 - 4ac} + (b - 2c - \sqrt{b^2 - 4ac})x^2} dx, x, \tan \left( \frac{x}{2} \right) \right)}{a} \\
 &= - \frac{2c \left( 1 + \frac{b}{\sqrt{b^2 - 4ac}} \right) \operatorname{arctan} \left( \frac{\sqrt{b - 2c - \sqrt{b^2 - 4ac}} \tan \left( \frac{x}{2} \right)}{\sqrt{b + 2c - \sqrt{b^2 - 4ac}}} \right)}{a \sqrt{b - 2c - \sqrt{b^2 - 4ac}} \sqrt{b + 2c - \sqrt{b^2 - 4ac}}} \\
 &\quad - \frac{2c \left( 1 - \frac{b}{\sqrt{b^2 - 4ac}} \right) \operatorname{arctan} \left( \frac{\sqrt{b - 2c + \sqrt{b^2 - 4ac}} \tan \left( \frac{x}{2} \right)}{\sqrt{b + 2c + \sqrt{b^2 - 4ac}}} \right)}{a \sqrt{b - 2c + \sqrt{b^2 - 4ac}} \sqrt{b + 2c + \sqrt{b^2 - 4ac}}} + \frac{\operatorname{arctanh}(\sin(x))}{a}
 \end{aligned}$$

**Mathematica [A] (verified)**

Time = 1.03 (sec) , antiderivative size = 281, normalized size of antiderivative = 1.15

$$\int \frac{\sec(x)}{a + b \cos(x) + c \cos^2(x)} dx$$

$$= \frac{\sqrt{2c(-b+\sqrt{b^2-4ac}) \operatorname{arctanh}\left(\frac{(b-2c+\sqrt{b^2-4ac}) \tan\left(\frac{x}{2}\right)}{\sqrt{-2b^2+4c(a+c)-2b\sqrt{b^2-4ac}}}\right)} + \sqrt{b^2-4ac} \sqrt{-b^2+2c(a+c)-b\sqrt{b^2-4ac}}}{\sqrt{b^2-4ac} \sqrt{-b^2+2c(a+c)-b\sqrt{b^2-4ac}}} - \frac{\sqrt{2c(b+\sqrt{b^2-4ac}) \operatorname{arctanh}\left(\frac{(-b+2c+\sqrt{b^2-4ac}) \tan\left(\frac{x}{2}\right)}{\sqrt{-2b^2+4c(a+c)+2b\sqrt{b^2-4ac}}}\right)} + \sqrt{b^2-4ac} \sqrt{-b^2+2c(a+c)+b\sqrt{b^2-4ac}}}{\sqrt{b^2-4ac} \sqrt{-b^2+2c(a+c)+b\sqrt{b^2-4ac}}} - \log(\cos(x/2) + \sin(x/2))$$

[In] Integrate[Sec[x]/(a + b\*Cos[x] + c\*Cos[x]^2), x]

[Out] ((Sqrt[2]\*c\*(-b + Sqrt[b^2 - 4\*a\*c])\*ArcTanh[((b - 2\*c + Sqrt[b^2 - 4\*a\*c])\*Tan[x/2])/Sqrt[-2\*b^2 + 4\*c\*(a + c) - 2\*b\*Sqrt[b^2 - 4\*a\*c]]])/Sqrt[b^2 - 4\*a\*c]\*Sqrt[-b^2 + 2\*c\*(a + c) - b\*Sqrt[b^2 - 4\*a\*c]]) - (Sqrt[2]\*c\*(b + Sqrt[b^2 - 4\*a\*c])\*ArcTanh[((-b + 2\*c + Sqrt[b^2 - 4\*a\*c])\*Tan[x/2])/Sqrt[-2\*b^2 + 4\*c\*(a + c) + 2\*b\*Sqrt[b^2 - 4\*a\*c]]])/Sqrt[b^2 - 4\*a\*c]\*Sqrt[-b^2 + 2\*c\*(a + c) + b\*Sqrt[b^2 - 4\*a\*c]]) - Log[Cos[x/2] - Sin[x/2]] + Log[Cos[x/2] + Sin[x/2]])/a

**Maple [A] (verified)**

Time = 2.75 (sec) , antiderivative size = 274, normalized size of antiderivative = 1.12

method	result
default	$2(a-b+c) \left( \frac{(-b\sqrt{-4ac+b^2}+c\sqrt{-4ac+b^2}-2ac+b^2-cb) \operatorname{arctanh}\left(\frac{(-a+b-c) \tan\left(\frac{x}{2}\right)}{\sqrt{(\sqrt{-4ac+b^2}-a+c)(a-b+c)}}\right)}{2\sqrt{-4ac+b^2}(a-b+c)\sqrt{(\sqrt{-4ac+b^2}-a+c)(a-b+c)}} + \frac{(-b\sqrt{-4ac+b^2}+c\sqrt{-4ac+b^2}+2ac-b^2+cb) \operatorname{arctanh}\left(\frac{(-a+b-c) \tan\left(\frac{x}{2}\right)}{\sqrt{(\sqrt{-4ac+b^2}-a+c)(a-b+c)}}\right)}{2\sqrt{-4ac+b^2}(a-b+c)\sqrt{(\sqrt{-4ac+b^2}-a+c)(a-b+c)}} \right)$
risch	Expression too large to display

[In] int(sec(x)/(a+cos(x)\*b+c\*cos(x)^2), x, method=\_RETURNVERBOSE)

[Out] 2/a\*(a-b+c)\*(1/2\*(-b\*(-4\*a\*c+b^2)^(1/2)+c\*(-4\*a\*c+b^2)^(1/2)-2\*a\*c+b^2-c\*b)/(-4\*a\*c+b^2)^(1/2)/(a-b+c)/(((4\*a\*c+b^2)^(1/2)-a+c)\*(a-b+c))^(1/2)\*arctanh((-a+b-c)\*tan(1/2\*x)/(((4\*a\*c+b^2)^(1/2)-a+c)\*(a-b+c))^(1/2))+1/2\*(-b\*(-4\*a\*c+b^2)^(1/2)+c\*(-4\*a\*c+b^2)^(1/2)+2\*a\*c-b^2+c\*b)/(-4\*a\*c+b^2)^(1/2)/(a-b+c)/(((4\*a\*c+b^2)^(1/2)+a-c)\*(a-b+c))^(1/2)\*arctanh((a-b+c)\*tan(1/2\*x)/(((4\*a\*c+b^2)^(1/2)+a-c)\*(a-b+c))^(1/2)))+1/a\*ln(tan(1/2\*x)+1)-1/a\*ln(tan(1/2\*x)-1)

**Fricas [B] (verification not implemented)**

Leaf count of result is larger than twice the leaf count of optimal. 5292 vs.  $2(204) = 408$ .

Time = 74.29 (sec) , antiderivative size = 5292, normalized size of antiderivative = 21.60

$$\int \frac{\sec(x)}{a + b \cos(x) + c \cos^2(x)} dx = \text{Too large to display}$$

[In] integrate(sec(x)/(a+b\*cos(x)+c\*cos(x)^2),x, algorithm="fricas")

[Out] Too large to include

**Sympy [F]**

$$\int \frac{\sec(x)}{a + b \cos(x) + c \cos^2(x)} dx = \int \frac{\sec(x)}{a + b \cos(x) + c \cos^2(x)} dx$$

[In] integrate(sec(x)/(a+b\*cos(x)+c\*cos(x)\*\*2),x)

[Out] Integral(sec(x)/(a + b\*cos(x) + c\*cos(x)\*\*2), x)

**Maxima [F]**

$$\int \frac{\sec(x)}{a + b \cos(x) + c \cos^2(x)} dx = \int \frac{\sec(x)}{c \cos(x)^2 + b \cos(x) + a} dx$$

[In] integrate(sec(x)/(a+b\*cos(x)+c\*cos(x)^2),x, algorithm="maxima")

[Out]  $-1/2*(2*a*\text{integrate}(2*(2*b*c*\cos(3*x))^2 + 2*b*c*\cos(x)^2 + 2*b*c*\sin(3*x))^2 + 2*b*c*\sin(x)^2 + 4*(2*a*b + b*c)*\cos(2*x)^2 + c^2*\cos(x) + 4*(2*a*b + b*c)*\sin(2*x)^2 + 2*(2*b^2 + 2*a*c + c^2)*\sin(2*x)*\sin(x) + (c^2*\cos(3*x) + 2*b*c*\cos(2*x) + c^2*\cos(x))*\cos(4*x) + (4*b*c*\cos(x) + c^2 + 2*(2*b^2 + 2*a*c + c^2)*\cos(2*x))*\cos(3*x) + 2*(b*c + (2*b^2 + 2*a*c + c^2)*\cos(x))*\cos(2*x) + (c^2*\sin(3*x) + 2*b*c*\sin(2*x) + c^2*\sin(x))*\sin(4*x) + 2*(2*b*c*\sin(x) + (2*b^2 + 2*a*c + c^2)*\sin(2*x))*\sin(3*x))/(a*c^2*\cos(4*x)^2 + 4*a*b^2*\cos(3*x)^2 + 4*a*b^2*\cos(x)^2 + a*c^2*\sin(4*x)^2 + 4*a*b^2*\sin(3*x)^2 + 4*a*b^2*\sin(x)^2 + 4*a*b*c*\cos(x) + a*c^2 + 4*(4*a^3 + 4*a^2*c + a*c^2)*\cos(2*x)^2 + 4*(4*a^3 + 4*a^2*c + a*c^2)*\sin(2*x)^2 + 8*(2*a^2*b + a*b*c)*\sin(2*x)*\sin(x) + 2*(2*a*b*c*\cos(3*x) + 2*a*b*c*\cos(x) + a*c^2 + 2*(2*a^2*c + a*c^2)*\cos(2*x))*\cos(4*x) + 4*(2*a*b^2*\cos(x) + a*b*c + 2*(2*a^2*b + a*b*c)*\cos(2*x))*\cos(3*x) + 4*(2*a^2*c + a*c^2 + 2*(2*a^2*b + a*b*c)*\cos(x))*\cos(2*x) + 4*(a*b*c*\sin(3*x) + a*b*c*\sin(x) + (2*a^2*c + a*c^2)*\sin(2*x))*\sin(4*x) + 8*(a*b^2*\sin(x) + (2*a^2*b + a*b*c)*\sin(2*x))*\sin(3*x)), x) - \log(\cos(x)^2 + \sin(x)^2 + 2*\sin(x) + 1) + \log(\cos(x)^2 + \sin(x)^2 - 2*\sin(x) + 1))/a$

## Giac [B] (verification not implemented)

Leaf count of result is larger than twice the leaf count of optimal. 8954 vs.  $2(204) = 408$ .

Time = 2.38 (sec) , antiderivative size = 8954, normalized size of antiderivative = 36.55

$$\int \frac{\sec(x)}{a + b \cos(x) + c \cos^2(x)} dx = \text{Too large to display}$$

[In] integrate(sec(x)/(a+b\*cos(x)+c\*cos(x)^2),x, algorithm="giac")

[Out]  $((2*a^2*b^5 - 4*a*b^6 + 2*b^7 - 16*a^3*b^3*c + 30*a^2*b^4*c - 8*a*b^5*c - 6*b^6*c + 32*a^4*b*c^2 - 48*a^3*b^2*c^2 - 32*a^2*b^3*c^2 + 44*a*b^4*c^2 + 6*b^5*c^2 - 32*a^4*c^3 + 128*a^3*b*c^3 - 64*a^2*b^2*c^3 - 48*a*b^3*c^3 - 2*b^4*c^3 - 64*a^3*c^4 + 96*a^2*b*c^4 + 16*a*b^2*c^4 - 32*a^2*c^5 + 3*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}}*(a - b + c))*\sqrt{b^2 - 4*a*c}*a^2*b^3 - 2*(b^2 - 4*a*c)*a^2*b^3 - 2*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}}*(a - b + c))*\sqrt{b^2 - 4*a*c}*a*b^4 + 4*(b^2 - 4*a*c)*a*b^4 - 5*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}}*(a - b + c))*\sqrt{b^2 - 4*a*c}*b^5 - 2*(b^2 - 4*a*c)*b^5 - 12*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}}*(a - b + c))*\sqrt{b^2 - 4*a*c}*a^3*b*c + 8*(b^2 - 4*a*c)*a^3*b*c + 5*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}}*(a - b + c))*\sqrt{b^2 - 4*a*c}*a^2*b^2*c - 14*(b^2 - 4*a*c)*a^2*b^2*c + 36*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}}*(a - b + c))*\sqrt{b^2 - 4*a*c}*a*b^3*c + 11*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}}*(a - b + c))*\sqrt{b^2 - 4*a*c}*b^4*c + 6*(b^2 - 4*a*c)*b^4*c + 12*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}}*(a - b + c))*\sqrt{b^2 - 4*a*c}*a^3*c^2 - 8*(b^2 - 4*a*c)*a^3*c^2 - 64*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}}*(a - b + c))*\sqrt{b^2 - 4*a*c}*a^2*b*c^2 + 32*(b^2 - 4*a*c)*a^2*b*c^2 - 58*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}}*(a - b + c))*\sqrt{b^2 - 4*a*c}*a*b^2*c^2 - 20*(b^2 - 4*a*c)*a*b^2*c^2 - 11*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}}*(a - b + c))*\sqrt{b^2 - 4*a*c}*b^3*c^2 - 6*(b^2 - 4*a*c)*b^3*c^2 + 56*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}}*(a - b + c))*\sqrt{b^2 - 4*a*c}*a^2*c^3 - 16*(b^2 - 4*a*c)*a^2*c^3 + 44*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}}*(a - b + c))*\sqrt{b^2 - 4*a*c}*a*b*c^3 + 24*(b^2 - 4*a*c)*a*b*c^3 + 5*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}}*(a - b + c))*\sqrt{b^2 - 4*a*c}*b^2*c^3 + 2*(b^2 - 4*a*c)*b^2*c^3 - 20*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}}*(a - b + c))*\sqrt{b^2 - 4*a*c}*a*c^4 - 8*(b^2 - 4*a*c)*a*c^4)*a^2*abs(a - b + c) - (4*a^3*b^5 - 8*a^2*b^6 + 4*a*b^7 - 32*a^4*b^3*c + 68*a^3*b^4*c - 32*a^2*b^5*c - 4*a*b^6*c + 64*a^5*b*c^2 - 160*a^4*b^2*c^2 + 64*a^3*b^3*c^2 + 40*a^2*b^4*c^2 - 4*a*b^5*c^2 + 64*a^5*c^3 - 128*a^3*b^2*c^3 + 32*a^2*b^3*c^3 + 4*a*b^4*c^3 + 128*a^4*c^4 - 64*a^3*b*c^4 - 32*a^2*b^2*c^4 + 64*a^3*c^5 + 3*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}}*(a - b + c))*a^4*b^3 - 5*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}}*(a - b + c))*a^3*b^4 - 3*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}}*(a - b + c))*a^2*b^5 + 5*\sqrt{a^2 - a*b + b*c - c^2 + \sqrt{b^2 - 4*a*c}}*(a - b + c))*a*b^6 - 12*\sqrt{a^2 - a$



$$\begin{aligned}
& *b + b*c - c^2 + \sqrt{b^2 - 4*a*c}*(a - b + c))*a^5*b*c + 23*\sqrt{a^2 - a*b} \\
& + b*c - c^2 + \sqrt{b^2 - 4*a*c}*(a - b + c))*a^4*b^2*c + 24*\sqrt{a^2 - a*b} \\
& + b*c - c^2 + \sqrt{b^2 - 4*a*c}*(a - b + c))*a^3*b^3*c - 33*\sqrt{a^2 - a*b} \\
& + b*c - c^2 + \sqrt{b^2 - 4*a*c}*(a - b + c))*a^2*b^4*c - 6*\sqrt{a^2 - a*b} \\
& + b*c - c^2 + \sqrt{b^2 - 4*a*c}*(a - b + c))*a*b^5*c - 12*\sqrt{a^2 - a*b} \\
& + b*c - c^2 + \sqrt{b^2 - 4*a*c}*(a - b + c))*a^5*c^2 - 48*\sqrt{a^2 - a*b} + b* \\
& c - c^2 + \sqrt{b^2 - 4*a*c}*(a - b + c))*a^4*b*c^2 + 69*\sqrt{a^2 - a*b} + b* \\
& c - c^2 + \sqrt{b^2 - 4*a*c}*(a - b + c))*a^3*b^2*c^2 + 23*\sqrt{a^2 - a*b} + \\
& b*c - c^2 + \sqrt{b^2 - 4*a*c}*(a - b + c))*a^2*b^3*c^2 - 68*\sqrt{a^2 - a*b} \\
& + b*c - c^2 + \sqrt{b^2 - 4*a*c}*(a - b + c))*a^4*c^3 + 4*\sqrt{a^2 - a*b} + b \\
& *c - c^2 + \sqrt{b^2 - 4*a*c}*(a - b + c))*a^3*b*c^3 + 9*\sqrt{a^2 - a*b} + b* \\
& c - c^2 + \sqrt{b^2 - 4*a*c}*(a - b + c))*a^2*b^2*c^3 + 6*\sqrt{a^2 - a*b} + b \\
& *c - c^2 + \sqrt{b^2 - 4*a*c}*(a - b + c))*a*b^3*c^3 - 36*\sqrt{a^2 - a*b} + b \\
& *c - c^2 + \sqrt{b^2 - 4*a*c}*(a - b + c))*a^3*c^4 - 24*\sqrt{a^2 - a*b} + b*c \\
& - c^2 + \sqrt{b^2 - 4*a*c}*(a - b + c))*a^2*b*c^4 - 5*\sqrt{a^2 - a*b} + b*c \\
& - c^2 + \sqrt{b^2 - 4*a*c}*(a - b + c))*a*b^2*c^4 + 20*\sqrt{a^2 - a*b} + b*c \\
& - c^2 + \sqrt{b^2 - 4*a*c}*(a - b + c))*a^2*c^5 - 4*(b^2 - 4*a*c)*a^3*b^3 + \\
& 8*(b^2 - 4*a*c)*a^2*b^4 - 4*(b^2 - 4*a*c)*a*b^5 + 16*(b^2 - 4*a*c)*a^4*b*c \\
& - 36*(b^2 - 4*a*c)*a^3*b^2*c + 16*(b^2 - 4*a*c)*a^2*b^3*c + 4*(b^2 - 4*a*c) \\
& *a*b^4*c + 16*(b^2 - 4*a*c)*a^4*c^2 - 24*(b^2 - 4*a*c)*a^2*b^2*c^2 + 4*(b^2 \\
& - 4*a*c)*a*b^3*c^2 + 32*(b^2 - 4*a*c)*a^3*c^3 - 16*(b^2 - 4*a*c)*a^2*b*c^3 \\
& - 4*(b^2 - 4*a*c)*a*b^2*c^3 + 16*(b^2 - 4*a*c)*a^2*c^4)*abs(a - b + c)*abs \\
& (a) - (2*a^5*b^4 - 4*a^4*b^5 + 2*a^3*b^6 - 12*a^6*b^2*c + 22*a^5*b^3*c - 6* \\
& a^4*b^4*c - 2*a^3*b^5*c - 2*a^2*b^6*c + 16*a^7*c^2 - 24*a^6*b*c^2 - 12*a^5* \\
& b^2*c^2 + 6*a^4*b^3*c^2 + 10*a^3*b^4*c^2 + 6*a^2*b^5*c^2 + 16*a^6*c^3 + 8*a \\
& ^5*b*c^3 - 4*a^4*b^2*c^3 - 30*a^3*b^3*c^3 - 6*a^2*b^4*c^3 - 16*a^5*c^4 + 24 \\
& *a^4*b*c^4 + 28*a^3*b^2*c^4 + 2*a^2*b^3*c^4 - 16*a^4*c^5 - 8*a^3*b*c^5 + 3* \\
& \sqrt{a^2 - a*b} + b*c - c^2 + \sqrt{b^2 - 4*a*c}*(a - b + c))*\sqrt{b^2 - 4*a* \\
& c})*a^5*b^2 - 2*(b^2 - 4*a*c)*a^5*b^2 - 2*\sqrt{a^2 - a*b} + b*c - c^2 + \sqrt{ \\
& b^2 - 4*a*c}*(a - b + c))*\sqrt{b^2 - 4*a*c})*a^4*b^3 + 4*(b^2 - 4*a*c)*a^4*b \\
& ^3 - 5*\sqrt{a^2 - a*b} + b*c - c^2 + \sqrt{b^2 - 4*a*c}*(a - b + c))*\sqrt{b^2 \\
& - 4*a*c})*a^3*b^4 - 2*(b^2 - 4*a*c)*a^3*b^4 - 6*\sqrt{a^2 - a*b} + b*c - c^2 \\
& + \sqrt{b^2 - 4*a*c}*(a - b + c))*\sqrt{b^2 - 4*a*c})*a^6*c + 4*(b^2 - 4*a*c)* \\
& a^6*c + \sqrt{a^2 - a*b} + b*c - c^2 + \sqrt{b^2 - 4*a*c}*(a - b + c))*\sqrt{b^ \\
& 2 - 4*a*c})*a^5*b*c - 6*(b^2 - 4*a*c)*a^5*b*c + 23*\sqrt{a^2 - a*b} + b*c - c^ \\
& 2 + \sqrt{b^2 - 4*a*c}*(a - b + c))*\sqrt{b^2 - 4*a*c})*a^4*b^2*c - 2*(b^2 - 4 \\
& *a*c)*a^4*b^2*c + 13*\sqrt{a^2 - a*b} + b*c - c^2 + \sqrt{b^2 - 4*a*c}*(a - b \\
& + c))*\sqrt{b^2 - 4*a*c})*a^3*b^3*c + 2*(b^2 - 4*a*c)*a^3*b^3*c + 5*\sqrt{a^2 \\
& - a*b} + b*c - c^2 + \sqrt{b^2 - 4*a*c}*(a - b + c))*\sqrt{b^2 - 4*a*c})*a^2*b^ \\
& 4*c + 2*(b^2 - 4*a*c)*a^2*b^4*c - 22*\sqrt{a^2 - a*b} + b*c - c^2 + \sqrt{b^2 \\
& - 4*a*c}*(a - b + c))*\sqrt{b^2 - 4*a*c})*a^5*c^2 + 4*(b^2 - 4*a*c)*a^5*c^2 - \\
& 27*\sqrt{a^2 - a*b} + b*c - c^2 + \sqrt{b^2 - 4*a*c}*(a - b + c))*\sqrt{b^2 - \\
& 4*a*c})*a^4*b*c^2 + 2*(b^2 - 4*a*c)*a^4*b*c^2 - 37*\sqrt{a^2 - a*b} + b*c - c^ \\
& 2 + \sqrt{b^2 - 4*a*c}*(a - b + c))*\sqrt{b^2 - 4*a*c})*a^3*b^2*c^2 - 2*(b^2 - \\
& 4*a*c)*a^3*b^2*c^2 - 11*\sqrt{a^2 - a*b} + b*c - c^2 + \sqrt{b^2 - 4*a*c}*(a
\end{aligned}$$

$$\begin{aligned}
& - b + c))\sqrt{b^2 - 4ac}a^2b^3c^2 - 6(b^2 - 4ac)a^2b^3c^2 + 38\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c)\sqrt{b^2 - 4ac} \\
& c)a^4c^3 - 4(b^2 - 4ac)a^4c^3 + 31\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c)\sqrt{b^2 - 4ac} \\
& a^3b^3c^3 + 11\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c)\sqrt{b^2 - 4ac}a^2b^2c^3 + 6(b^2 - 4ac)a^2b^2c^3 - 10\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c)\sqrt{b^2 - 4ac}a^3c^4 - \\
& 4(b^2 - 4ac)a^3c^4 - 5\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c)\sqrt{b^2 - 4ac}a^2b^4c - 2(b^2 - 4ac)a^2b^4c) \operatorname{abs}(a - b + c) \\
& (\pi \operatorname{floor}(1/2x/\pi + 1/2) + \arctan(2\sqrt{1/2}\tan(1/2x)/\sqrt{(2a^2 - 2ac + \sqrt{-4(a^2 + ab + ac)}(a^2 - ab + ac) + 4(a^2 - ac)^2}))/((3a^8b^2 - 8a^7b^3 - a^6b^4 + 16a^5b^5 - 7a^4b^6 - 8a^3b^7 + 5a^2b^8 - 12a^9c + 32a^8bc + 30a^7b^2c - 112a^6b^3c + 8a^5b^4c + 96a^4b^5c - 26a^3b^6c - 16a^2b^7c - 104a^8c^2 + 192a^7bc^2 + 149a^6b^2c^2 - 336a^5b^3c^2 - 30a^4b^4c^2 + 112a^3b^5c^2 + 17a^2b^6c^2 - 276a^7c^3 + 320a^6b^3c^3 + 292a^5b^2c^3 - 224a^4b^3c^3 - 120a^3b^4c^3 - 304a^6c^4 + 128a^5b^4c^4 + 237a^4b^2c^4 + 24a^3b^3c^4 - 17a^2b^4c^4 - 116a^5c^5 - 96a^4b^3c^5 + 62a^3b^2c^5 + 16a^2b^3c^5 + 24a^4c^6 - 64a^3b^3c^6 - 5a^2b^2c^6 + 20a^3c^7) \operatorname{abs}(a)) - ((2a^2b^5 - 4ab^6 + 2b^7 - 16a^3b^3c + 30a^2b^4c - 8ab^5c - 6b^6c + 32a^4b^3c^2 - 48a^3b^2c^2 - 32a^2b^3c^2 + 44ab^4c^2 + 6b^5c^2 - 32a^4c^3 + 128a^3b^3c^3 - 64a^2b^2c^3 - 48ab^3c^3 - 2b^4c^3 - 64a^3c^4 + 96a^2b^3c^4 + 16ab^2c^4 - 32a^2c^5 + 3\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c))\sqrt{b^2 - 4ac}a^2b^3 - 2(b^2 - 4ac)a^2b^3 - 2\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c))\sqrt{b^2 - 4ac}ab^4 + 4(b^2 - 4ac)ab^4 - 5\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c))\sqrt{b^2 - 4ac}b^5 - 2(b^2 - 4ac)b^5 - 12\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c))\sqrt{b^2 - 4ac}a^3bc + 8(b^2 - 4ac)a^3bc + 5\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c))\sqrt{b^2 - 4ac}a^2b^2c - 14(b^2 - 4ac)a^2b^2c + 36\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c))\sqrt{b^2 - 4ac}ab^3c + 11\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c))\sqrt{b^2 - 4ac}b^4c + 6(b^2 - 4ac)b^4c + 12\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c))\sqrt{b^2 - 4ac}a^3c^2 - 8(b^2 - 4ac)a^3c^2 - 64\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c))\sqrt{b^2 - 4ac}a^2b^2c^2 + 32(b^2 - 4ac)a^2b^2c^2 - 58\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c))\sqrt{b^2 - 4ac}ab^2c^2 - 20(b^2 - 4ac)ab^2c^2 - 11\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c))\sqrt{b^2 - 4ac}b^3c^2 - 6(b^2 - 4ac)b^3c^2 + 56\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c))\sqrt{b^2 - 4ac}a^2c^3 - 16(b^2 - 4ac)a^2c^3 + 44\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c))\sqrt{b^2 - 4ac}ab^3c^3 + 24(b^2 - 4ac)ab^3c^3 + 5\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c))\sqrt{b^2 - 4ac}b^2c^3 + 2(b^2 - 4ac)b^2c^3 - 20\sqrt{a^2 -
\end{aligned}$$

$$\begin{aligned}
& a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}*(a - b + c))*\sqrt{b^2 - 4*a*c}*a*c^4 - \\
& 8*(b^2 - 4*a*c)*a*c^4)*a^2*abs(a - b + c) - (4*a^3*b^5 - 8*a^2*b^6 + 4*a*b^7 - \\
& 32*a^4*b^3*c + 68*a^3*b^4*c - 32*a^2*b^5*c - 4*a*b^6*c + 64*a^5*b*c^2 - \\
& 160*a^4*b^2*c^2 + 64*a^3*b^3*c^2 + 40*a^2*b^4*c^2 - 4*a*b^5*c^2 + 64*a^5*c^3 - \\
& 128*a^3*b^2*c^3 + 32*a^2*b^3*c^3 + 4*a*b^4*c^3 + 128*a^4*c^4 - 64*a^3*b*c^4 - \\
& 32*a^2*b^2*c^4 + 64*a^3*c^5 - 3*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c))*a^4*b^3 + \\
& 5*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c))*a^3*b^4 + 3*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c))*a^2*b^5 - \\
& 5*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c))*a*b^6 + 12*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c))*a^5*b*c - \\
& 23*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c))*a^4*b^2*c - 24*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c))*a^3*b^3*c + \\
& 33*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c))*a^2*b^4*c + 6*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c))*a*b^5*c + \\
& 12*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c))*a^5*c^2 + 48*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c))*a^4*b*c^2 - \\
& 69*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c))*a^3*b^2*c^2 - 23*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c))*a^2*b^3*c^2 + \\
& 68*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c))*a^4*c^3 - 4*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c))*a^3*b*c^3 - \\
& 9*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c))*a^2*b^2*c^3 - 6*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c))*a*b^3*c^3 + \\
& 36*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c))*a^3*c^4 + 24*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c))*a^2*b*c^4 + \\
& 5*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c))*a*b^2*c^4 - 20*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c))*a^2*c^5 - \\
& 4*(b^2 - 4*a*c)*a^3*b^3 + 8*(b^2 - 4*a*c)*a^2*b^4 - 4*(b^2 - 4*a*c)*a*b^5 + 16*(b^2 - 4*a*c)*a^4*b*c - 36*(b^2 - 4*a*c)*a^3*b^2*c + \\
& 16*(b^2 - 4*a*c)*a^2*b^3*c + 4*(b^2 - 4*a*c)*a*b^4*c + 16*(b^2 - 4*a*c)*a^4*c^2 - 24*(b^2 - 4*a*c)*a^2*b^2*c^2 + \\
& 4*(b^2 - 4*a*c)*a*b^3*c^2 + 32*(b^2 - 4*a*c)*a^3*c^3 - 16*(b^2 - 4*a*c)*a^2*b*c^3 - 4*(b^2 - 4*a*c)*a*b^2*c^3 + 16*(b^2 - 4*a*c)*a^2*c^4)*abs(a - b + c)*abs(a) - \\
& (2*a^5*b^4 - 4*a^4*b^5 + 2*a^3*b^6 - 12*a^6*b^2*c + 22*a^5*b^3*c - 6*a^4*b^4*c - 2*a^3*b^5*c - 2*a^2*b^6*c + 16*a^7*c^2 - 24*a^6*b*c^2 - \\
& 12*a^5*b^2*c^2 + 6*a^4*b^3*c^2 + 10*a^3*b^4*c^2 + 6*a^2*b^5*c^2 + 16*a^6*c^3 + 8*a^5*b*c^3 - 4*a^4*b^2*c^3 - 30*a^3*b^3*c^3 - 6*a^2*b^4*c^3 - \\
& 16*a^5*c^4 + 24*a^4*b*c^4 + 28*a^3*b^2*c^4 + 2*a^2*b^3*c^4 - 16*a^4*c^5 - 8*a^3*b*c^5 + 3*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c))*\sqrt{b^2 - 4*a*c}*a^5*b^2 - \\
& 2*(b^2 - 4*a*c)*a^5*b^2 - 2*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c))*\sqrt{b^2 - 4*a*c}*a^4*b^3 + 4*(b^2 - 4*a*c)*a^4*b^3 - \\
& 5*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c))*\sqrt{b^2 - 4*a*c}*a^3*b^4 - 2*(b^2 - 4*a*c)*a^3*b^4 - 6*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c))*\sqrt{b^2 - 4*a*c}*a^6*c + \\
& 4*(b^2 - 4*a*c)*a^6*c + \sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c))*\sqrt{b^2 - 4*a*c}*a^5*b*c - 6*(b^2 - 4*a*c)*a^5*b*c + 23*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c))*s
\end{aligned}$$

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sqrt(b^2 - 4*a*c)*a^4*b^2*c - 2*(b^2 - 4*a*c)*a^4*b^2*c + 13*sqrt(a^2 - a*b
+ b*c - c^2 - sqrt(b^2 - 4*a*c)*(a - b + c))*sqrt(b^2 - 4*a*c)*a^3*b^3*c +
2*(b^2 - 4*a*c)*a^3*b^3*c + 5*sqrt(a^2 - a*b + b*c - c^2 - sqrt(b^2 - 4*a*c
))*(a - b + c))*sqrt(b^2 - 4*a*c)*a^2*b^4*c + 2*(b^2 - 4*a*c)*a^2*b^4*c - 22
*sqrt(a^2 - a*b + b*c - c^2 - sqrt(b^2 - 4*a*c)*(a - b + c))*sqrt(b^2 - 4*a
*c)*a^5*c^2 + 4*(b^2 - 4*a*c)*a^5*c^2 - 27*sqrt(a^2 - a*b + b*c - c^2 - sqr
t(b^2 - 4*a*c)*(a - b + c))*sqrt(b^2 - 4*a*c)*a^4*b*c^2 + 2*(b^2 - 4*a*c)*a
^4*b*c^2 - 37*sqrt(a^2 - a*b + b*c - c^2 - sqrt(b^2 - 4*a*c)*(a - b + c))*s
qrt(b^2 - 4*a*c)*a^3*b^2*c^2 - 2*(b^2 - 4*a*c)*a^3*b^2*c^2 - 11*sqrt(a^2 -
a*b + b*c - c^2 - sqrt(b^2 - 4*a*c)*(a - b + c))*sqrt(b^2 - 4*a*c)*a^2*b^3*
c^2 - 6*(b^2 - 4*a*c)*a^2*b^3*c^2 + 38*sqrt(a^2 - a*b + b*c - c^2 - sqrt(b^
2 - 4*a*c)*(a - b + c))*sqrt(b^2 - 4*a*c)*a^4*c^3 - 4*(b^2 - 4*a*c)*a^4*c^3
+ 31*sqrt(a^2 - a*b + b*c - c^2 - sqrt(b^2 - 4*a*c)*(a - b + c))*sqrt(b^2
- 4*a*c)*a^3*b*c^3 + 6*(b^2 - 4*a*c)*a^3*b*c^3 + 11*sqrt(a^2 - a*b + b*c -
c^2 - sqrt(b^2 - 4*a*c)*(a - b + c))*sqrt(b^2 - 4*a*c)*a^2*b^2*c^3 + 6*(b^2
- 4*a*c)*a^2*b^2*c^3 - 10*sqrt(a^2 - a*b + b*c - c^2 - sqrt(b^2 - 4*a*c)*(
a - b + c))*sqrt(b^2 - 4*a*c)*a^3*c^4 - 4*(b^2 - 4*a*c)*a^3*c^4 - 5*sqrt(a^
2 - a*b + b*c - c^2 - sqrt(b^2 - 4*a*c)*(a - b + c))*sqrt(b^2 - 4*a*c)*a^2*
b*c^4 - 2*(b^2 - 4*a*c)*a^2*b*c^4)*abs(a - b + c))*(pi*floor(1/2*x/pi + 1/2
) + arctan(2*sqrt(1/2)*tan(1/2*x)/sqrt((2*a^2 - 2*a*c - sqrt(-4*(a^2 + a*b
+ a*c)*(a^2 - a*b + a*c) + 4*(a^2 - a*c)^2))/(a^2 - a*b + a*c))))/((3*a^8*b
^2 - 8*a^7*b^3 - a^6*b^4 + 16*a^5*b^5 - 7*a^4*b^6 - 8*a^3*b^7 + 5*a^2*b^8 -
12*a^9*c + 32*a^8*b*c + 30*a^7*b^2*c - 112*a^6*b^3*c + 8*a^5*b^4*c + 96*a^
4*b^5*c - 26*a^3*b^6*c - 16*a^2*b^7*c - 104*a^8*c^2 + 192*a^7*b*c^2 + 149*a
^6*b^2*c^2 - 336*a^5*b^3*c^2 - 30*a^4*b^4*c^2 + 112*a^3*b^5*c^2 + 17*a^2*b^
6*c^2 - 276*a^7*c^3 + 320*a^6*b*c^3 + 292*a^5*b^2*c^3 - 224*a^4*b^3*c^3 - 1
20*a^3*b^4*c^3 - 304*a^6*c^4 + 128*a^5*b*c^4 + 237*a^4*b^2*c^4 + 24*a^3*b^3
*c^4 - 17*a^2*b^4*c^4 - 116*a^5*c^5 - 96*a^4*b*c^5 + 62*a^3*b^2*c^5 + 16*a^
2*b^3*c^5 + 24*a^4*c^6 - 64*a^3*b*c^6 - 5*a^2*b^2*c^6 + 20*a^3*c^7)*abs(a))
+ log(abs(tan(1/2*x) + 1))/a - log(abs(tan(1/2*x) - 1))/a

```

## Mupad [B] (verification not implemented)

Time = 15.39 (sec) , antiderivative size = 20126, normalized size of antiderivative = 82.15

$$\int \frac{\sec(x)}{a + b \cos(x) + c \cos^2(x)} dx = \text{Too large to display}$$

```
[In] int(1/(cos(x)*(a + b*cos(x) + c*cos(x)^2)),x)
```

```
[Out] (2*atanh((16384*b^4*tan(x/2))/(655360*a*c^3 - 393216*b*c^3 + 131072*b^3*c +
16384*b^4 + 540672*c^4 - (16384*b^5)/a + 262144*a^2*c^2 + (147456*c^5)/a -
360448*b^2*c^2 - (147456*b*c^4)/a + (49152*b^4*c)/a - (32768*b^5*c)/a^2 -
(262144*b^2*c^3)/a + (229376*b^3*c^2)/a - (32768*b^2*c^4)/a^2 + (32768*b^3*
c^3)/a^2 + (32768*b^4*c^2)/a^2 - 262144*a*b*c^2 - 131072*a*b^2*c) + (540672
```

$$\begin{aligned}
& *c^4 \tan(x/2)) / (655360*a*c^3 - 393216*b*c^3 + 131072*b^3*c + 16384*b^4 + 54 \\
& 0672*c^4 - (16384*b^5)/a + 262144*a^2*c^2 + (147456*c^5)/a - 360448*b^2*c^2 \\
& - (147456*b*c^4)/a + (49152*b^4*c)/a - (32768*b^5*c)/a^2 - (262144*b^2*c^3 \\
& )/a + (229376*b^3*c^2)/a - (32768*b^2*c^4)/a^2 + (32768*b^3*c^3)/a^2 + (327 \\
& 68*b^4*c^2)/a^2 - 262144*a*b*c^2 - 131072*a*b^2*c) - (16384*b^5*\tan(x/2)) / ( \\
& 16384*a*b^4 + 540672*a*c^4 - 147456*b*c^4 + 49152*b^4*c - 16384*b^5 + 14745 \\
& 6*c^5 + 655360*a^2*c^3 + 262144*a^3*c^2 - 262144*b^2*c^3 + 229376*b^3*c^2 - \\
& 360448*a*b^2*c^2 - 262144*a^2*b*c^2 - 131072*a^2*b^2*c - (32768*b^5*c)/a - \\
& (32768*b^2*c^4)/a + (32768*b^3*c^3)/a + (32768*b^4*c^2)/a - 393216*a*b*c^3 \\
& + 131072*a*b^3*c) + (147456*c^5*\tan(x/2)) / (16384*a*b^4 + 540672*a*c^4 - 14 \\
& 7456*b*c^4 + 49152*b^4*c - 16384*b^5 + 147456*c^5 + 655360*a^2*c^3 + 262144 \\
& *a^3*c^2 - 262144*b^2*c^3 + 229376*b^3*c^2 - 360448*a*b^2*c^2 - 262144*a^2* \\
& b*c^2 - 131072*a^2*b^2*c - (32768*b^5*c)/a - (32768*b^2*c^4)/a + (32768*b^3 \\
& *c^3)/a + (32768*b^4*c^2)/a - 393216*a*b*c^3 + 131072*a*b^3*c) + (262144*a^ \\
& 2*c^2*\tan(x/2)) / (655360*a*c^3 - 393216*b*c^3 + 131072*b^3*c + 16384*b^4 + 5 \\
& 40672*c^4 - (16384*b^5)/a + 262144*a^2*c^2 + (147456*c^5)/a - 360448*b^2*c^ \\
& 2 - (147456*b*c^4)/a + (49152*b^4*c)/a - (32768*b^5*c)/a^2 - (262144*b^2*c^ \\
& 3)/a + (229376*b^3*c^2)/a - (32768*b^2*c^4)/a^2 + (32768*b^3*c^3)/a^2 + (32 \\
& 768*b^4*c^2)/a^2 - 262144*a*b*c^2 - 131072*a*b^2*c) - (360448*b^2*c^2*\tan(x \\
& /2)) / (655360*a*c^3 - 393216*b*c^3 + 131072*b^3*c + 16384*b^4 + 540672*c^4 - \\
& (16384*b^5)/a + 262144*a^2*c^2 + (147456*c^5)/a - 360448*b^2*c^2 - (147456 \\
& *b*c^4)/a + (49152*b^4*c)/a - (32768*b^5*c)/a^2 - (262144*b^2*c^3)/a + (229 \\
& 376*b^3*c^2)/a - (32768*b^2*c^4)/a^2 + (32768*b^3*c^3)/a^2 + (32768*b^4*c^2 \\
& )/a^2 - 262144*a*b*c^2 - 131072*a*b^2*c) - (147456*b*c^4*\tan(x/2)) / (16384*a \\
& *b^4 + 540672*a*c^4 - 147456*b*c^4 + 49152*b^4*c - 16384*b^5 + 147456*c^5 + \\
& 655360*a^2*c^3 + 262144*a^3*c^2 - 262144*b^2*c^3 + 229376*b^3*c^2 - 360448 \\
& *a*b^2*c^2 - 262144*a^2*b*c^2 - 131072*a^2*b^2*c - (32768*b^5*c)/a - (32768 \\
& *b^2*c^4)/a + (32768*b^3*c^3)/a + (32768*b^4*c^2)/a - 393216*a*b*c^3 + 1310 \\
& 72*a*b^3*c) + (49152*b^4*c*\tan(x/2)) / (16384*a*b^4 + 540672*a*c^4 - 147456*b \\
& *c^4 + 49152*b^4*c - 16384*b^5 + 147456*c^5 + 655360*a^2*c^3 + 262144*a^3*c \\
& ^2 - 262144*b^2*c^3 + 229376*b^3*c^2 - 360448*a*b^2*c^2 - 262144*a^2*b*c^2 \\
& - 131072*a^2*b^2*c - (32768*b^5*c)/a - (32768*b^2*c^4)/a + (32768*b^3*c^3)/ \\
& a + (32768*b^4*c^2)/a - 393216*a*b*c^3 + 131072*a*b^3*c) - (32768*b^5*c*\tan \\
& (x/2)) / (147456*a*c^5 - 16384*a*b^5 - 32768*b^5*c + 16384*a^2*b^4 + 540672*a \\
& ^2*c^4 + 655360*a^3*c^3 + 262144*a^4*c^2 - 32768*b^2*c^4 + 32768*b^3*c^3 + \\
& 32768*b^4*c^2 - 262144*a*b^2*c^3 + 229376*a*b^3*c^2 - 393216*a^2*b*c^3 + 13 \\
& 1072*a^2*b^3*c - 262144*a^3*b*c^2 - 131072*a^3*b^2*c - 360448*a^2*b^2*c^2 - \\
& 147456*a*b*c^4 + 49152*a*b^4*c) - (262144*b^2*c^3*\tan(x/2)) / (16384*a*b^4 + \\
& 540672*a*c^4 - 147456*b*c^4 + 49152*b^4*c - 16384*b^5 + 147456*c^5 + 65536 \\
& 0*a^2*c^3 + 262144*a^3*c^2 - 262144*b^2*c^3 + 229376*b^3*c^2 - 360448*a*b^2 \\
& *c^2 - 262144*a^2*b*c^2 - 131072*a^2*b^2*c - (32768*b^5*c)/a - (32768*b^2*c \\
& ^4)/a + (32768*b^3*c^3)/a + (32768*b^4*c^2)/a - 393216*a*b*c^3 + 131072*a*b \\
& ^3*c) + (229376*b^3*c^2*\tan(x/2)) / (16384*a*b^4 + 540672*a*c^4 - 147456*b*c^ \\
& 4 + 49152*b^4*c - 16384*b^5 + 147456*c^5 + 655360*a^2*c^3 + 262144*a^3*c^2 \\
& - 262144*b^2*c^3 + 229376*b^3*c^2 - 360448*a*b^2*c^2 - 262144*a^2*b*c^2 - 1
\end{aligned}$$

$$\begin{aligned}
& 31072*a^2*b^2*c - (32768*b^5*c)/a - (32768*b^2*c^4)/a + (32768*b^3*c^3)/a + \\
& (32768*b^4*c^2)/a - 393216*a*b*c^3 + 131072*a*b^3*c) + (655360*a*c^3*\tan(x/2))/ \\
& (655360*a*c^3 - 393216*b*c^3 + 131072*b^3*c + 16384*b^4 + 540672*c^4 - \\
& (16384*b^5)/a + 262144*a^2*c^2 + (147456*c^5)/a - 360448*b^2*c^2 - (147456 \\
& *b*c^4)/a + (49152*b^4*c)/a - (32768*b^5*c)/a^2 - (262144*b^2*c^3)/a + (229 \\
& 376*b^3*c^2)/a - (32768*b^2*c^4)/a^2 + (32768*b^3*c^3)/a^2 + (32768*b^4*c^2 \\
& )/a^2 - 262144*a*b*c^2 - 131072*a*b^2*c) - (393216*b*c^3*\tan(x/2))/ \\
& (655360*a*c^3 - 393216*b*c^3 + 131072*b^3*c + 16384*b^4 + 540672*c^4 - (16384*b^5)/ \\
& a + 262144*a^2*c^2 + (147456*c^5)/a - 360448*b^2*c^2 - (147456*b*c^4)/a + ( \\
& 49152*b^4*c)/a - (32768*b^5*c)/a^2 - (262144*b^2*c^3)/a + (229376*b^3*c^2)/ \\
& a - (32768*b^2*c^4)/a^2 + (32768*b^3*c^3)/a^2 + (32768*b^4*c^2)/a^2 - 26214 \\
& 4*a*b*c^2 - 131072*a*b^2*c) + (131072*b^3*c*\tan(x/2))/ \\
& (655360*a*c^3 - 393216*b*c^3 + 131072*b^3*c + 16384*b^4 + 540672*c^4 - (16384*b^5)/a + 262144*a^ \\
& 2*c^2 + (147456*c^5)/a - 360448*b^2*c^2 - (147456*b*c^4)/a + (49152*b^4*c)/ \\
& a - (32768*b^5*c)/a^2 - (262144*b^2*c^3)/a + (229376*b^3*c^2)/a - (32768*b^ \\
& 2*c^4)/a^2 + (32768*b^3*c^3)/a^2 + (32768*b^4*c^2)/a^2 - 262144*a*b*c^2 - 1 \\
& 31072*a*b^2*c) - (32768*b^2*c^4*\tan(x/2))/ \\
& (147456*a*c^5 - 16384*a*b^5 - 32768*b^5*c + 16384*a^2*b^4 + 540672*a^2*c^4 + 655360*a^3*c^3 + 262144*a^4*c^2 \\
& - 32768*b^2*c^4 + 32768*b^3*c^3 + 32768*b^4*c^2 - 262144*a*b^2*c^3 + 22937 \\
& 6*a*b^3*c^2 - 393216*a^2*b*c^3 + 131072*a^2*b^3*c - 262144*a^3*b*c^2 - 1310 \\
& 72*a^3*b^2*c - 360448*a^2*b^2*c^2 - 147456*a*b*c^4 + 49152*a*b^4*c) + (3276 \\
& 8*b^3*c^3*\tan(x/2))/ \\
& (147456*a*c^5 - 16384*a*b^5 - 32768*b^5*c + 16384*a^2*b^4 + 540672*a^2*c^4 + \\
& 655360*a^3*c^3 + 262144*a^4*c^2 - 32768*b^2*c^4 + 32768*b^3*c^3 + 32768*b^4 \\
& *c^2 - 262144*a*b^2*c^3 + 229376*a*b^3*c^2 - 393216*a^2*b*c^3 + 131072*a^2* \\
& b^3*c - 262144*a^3*b*c^2 - 131072*a^3*b^2*c - 360448*a^2*b^2*c^2 - 147456*a \\
& *b*c^4 + 49152*a*b^4*c) - (262144*a*b*c^2*\tan(x/2))/ \\
& (655360*a*c^3 - 393216*b*c^3 + 131072*b^3*c + 16384*b^4 + 540672*c^4 - (16384*b^5)/a + 262144*a^2* \\
& c^2 + (147456*c^5)/a - 360448*b^2*c^2 - (147456*b*c^4)/a + (49152*b^4*c)/a \\
& - (32768*b^5*c)/a^2 - (262144*b^2*c^3)/a + (229376*b^3*c^2)/a - (32768*b^2* \\
& c^4)/a^2 + (32768*b^3*c^3)/a^2 + (32768*b^4*c^2)/a^2 - 262144*a*b*c^2 - 131 \\
& 072*a*b^2*c) - (131072*a*b^2*c*\tan(x/2))/ \\
& (655360*a*c^3 - 393216*b*c^3 + 131072*b^3*c + 16384*b^4 + 540672*c^4 - (16384*b^5)/a + 262144*a^2*c^2 + (1474 \\
& 56*c^5)/a - 360448*b^2*c^2 - (147456*b*c^4)/a + (49152*b^4*c)/a - (32768*b^ \\
& 5*c)/a^2 - (262144*b^2*c^3)/a + (229376*b^3*c^2)/a - (32768*b^2*c^4)/a^2 + \\
& (32768*b^3*c^3)/a^2 + (32768*b^4*c^2)/a^2 - 262144*a*b*c^2 - 131072*a*b^2*c \\
& ))/a - \operatorname{atan}\left(\frac{\left(\left(\left(8*a^2*c^4 - b^6 + 8*a^3*c^3 - b^3*(-(4*a*c - b^2)^3)\right)^{1/2}\right) + b^4*c^2 - 6*a*b^2*c^3 + b*c^2*(-(4*a*c - b^2)^3)^{1/2} - 18*a^2*b^2*c^2\right.}{2*(a^4*b^4 - a^2*b^6 + 16} \right. \\
& \left. \left. + 8*a*b^4*c + 2*a*b*c*(-(4*a*c - b^2)^3)^{1/2}\right)\right)^{1/2} * (24576*a*c^5 - 49152*a*b^5 - 3
\end{aligned}$$

$$\begin{aligned}
& 2768*b^5*c + 24576*b^6 + 32768*a^2*b^4 - 8192*a^3*b^3 + 180224*a^2*c^4 + 25 \\
& 3952*a^3*c^3 + 98304*a^4*c^2 - 8192*b^2*c^4 + 32768*b^3*c^3 - 16384*b^4*c^2 \\
& + (\tan(x/2)*(49152*a*b^6 - 65536*a^6*c + 16384*b^6*c - 16384*b^7 - 65536*a \\
& ^2*b^5 + 65536*a^3*b^4 - 49152*a^4*b^3 + 16384*a^5*b^2 - 147456*a^2*c^5 + 2 \\
& 12992*a^3*c^4 + 671744*a^4*c^3 + 245760*a^5*c^2 - 16384*b^4*c^3 + 16384*b^5 \\
& *c^2 + 98304*a*b^2*c^4 - 65536*a*b^3*c^3 - 180224*a*b^4*c^2 + 49152*a^2*b*c \\
& ^4 - 393216*a^2*b^4*c - 1081344*a^3*b*c^3 + 475136*a^3*b^3*c - 802816*a^4*b \\
& *c^2 - 327680*a^4*b^2*c + 344064*a^2*b^2*c^3 + 180224*a^2*b^3*c^2 + 557056* \\
& a^3*b^2*c^2 + 98304*a*b^5*c + 196608*a^5*b*c) + ((8*a^2*c^4 - b^6 + 8*a^3*c \\
& ^3 - b^3*(-(4*a*c - b^2)^3)^{(1/2)} + b^4*c^2 - 6*a*b^2*c^3 + b*c^2*(-(4*a*c \\
& - b^2)^3)^{(1/2)} - 18*a^2*b^2*c^2 + 8*a*b^4*c + 2*a*b*c*(-(4*a*c - b^2)^3)^{( \\
& 1/2)))/(2*(a^4*b^4 - a^2*b^6 + 16*a^4*c^4 + 32*a^5*c^3 + 16*a^6*c^2 + 10*a^3 \\
& *b^4*c - 8*a^5*b^2*c + a^2*b^4*c^2 - 8*a^3*b^2*c^3 - 32*a^4*b^2*c^2)))^{(1/2)} \\
& )*(57344*a^3*b^5 - 24576*a^2*b^6 - 40960*a^4*b^4 + 8192*a^5*b^3 - 98304*a^3 \\
& *c^5 - 425984*a^4*c^4 - 557056*a^5*c^3 - 229376*a^6*c^2 + 49152*a^2*b^5*c + \\
& 196608*a^3*b*c^4 + 90112*a^3*b^4*c + 622592*a^4*b*c^3 - 327680*a^4*b^3*c + \\
& 393216*a^5*b*c^2 + 221184*a^5*b^2*c + \tan(x/2)*((8*a^2*c^4 - b^6 + 8*a^3*c \\
& ^3 - b^3*(-(4*a*c - b^2)^3)^{(1/2)} + b^4*c^2 - 6*a*b^2*c^3 + b*c^2*(-(4*a*c \\
& - b^2)^3)^{(1/2)} - 18*a^2*b^2*c^2 + 8*a*b^4*c + 2*a*b*c*(-(4*a*c - b^2)^3)^{( \\
& 1/2)))/(2*(a^4*b^4 - a^2*b^6 + 16*a^4*c^4 + 32*a^5*c^3 + 16*a^6*c^2 + 10*a^3 \\
& *b^4*c - 8*a^5*b^2*c + a^2*b^4*c^2 - 8*a^3*b^2*c^3 - 32*a^4*b^2*c^2)))^{(1/2)} \\
& )*(65536*a^8*c + 16384*a^2*b^7 - 49152*a^3*b^6 + 65536*a^4*b^5 - 65536*a^5* \\
& b^4 + 49152*a^6*b^3 - 16384*a^7*b^2 + 196608*a^4*c^5 + 131072*a^5*c^4 - 262 \\
& 144*a^6*c^3 - 131072*a^7*c^2 - 16384*a^2*b^6*c - 114688*a^3*b^5*c - 65536*a \\
& ^4*b*c^4 + 376832*a^4*b^4*c + 720896*a^5*b*c^3 - 409600*a^5*b^3*c + 589824* \\
& a^6*b*c^2 + 294912*a^6*b^2*c + 16384*a^2*b^4*c^3 - 16384*a^2*b^5*c^2 - 1146 \\
& 88*a^3*b^2*c^4 + 81920*a^3*b^3*c^3 + 196608*a^3*b^4*c^2 - 557056*a^4*b^2*c^ \\
& 3 + 16384*a^4*b^3*c^2 - 655360*a^5*b^2*c^2 - 196608*a^7*b*c) + 24576*a^2*b^ \\
& 2*c^4 - 49152*a^2*b^3*c^3 + 106496*a^3*b^2*c^3 - 352256*a^3*b^3*c^2 + 17203 \\
& 2*a^4*b^2*c^2 - 32768*a^6*b*c) * ((8*a^2*c^4 - b^6 + 8*a^3*c^3 - b^3*(-(4*a*c \\
& - b^2)^3)^{(1/2)} + b^4*c^2 - 6*a*b^2*c^3 + b*c^2*(-(4*a*c - b^2)^3)^{(1/2)} \\
& - 18*a^2*b^2*c^2 + 8*a*b^4*c + 2*a*b*c*(-(4*a*c - b^2)^3)^{(1/2)))/(2*(a^4*b^ \\
& 4 - a^2*b^6 + 16*a^4*c^4 + 32*a^5*c^3 + 16*a^6*c^2 + 10*a^3*b^4*c - 8*a^5*b \\
& ^2*c + a^2*b^4*c^2 - 8*a^3*b^2*c^3 - 32*a^4*b^2*c^2)))^{(1/2)} + 24576*a*b^2* \\
& c^3 + 237568*a*b^3*c^2 - 458752*a^2*b*c^3 + 262144*a^2*b^3*c - 270336*a^3*b \\
& *c^2 - 155648*a^3*b^2*c + 16384*a^2*b^2*c^2 - 122880*a*b*c^4 - 114688*a*b^4 \\
& *c + 32768*a^4*b*c) + \tan(x/2)*(8192*a*b^4 - 73728*a*c^4 - 57344*b*c^4 + 40 \\
& 960*b^4*c - 8192*b^5 + 24576*c^5 - 81920*a^2*c^3 + 16384*a^3*c^2 + 81920*b^ \\
& 2*c^3 - 81920*b^3*c^2 - 81920*a*b^2*c^2 + 81920*a^2*b*c^2 - 32768*a^2*b^2*c \\
& + 163840*a*b*c^3) * ((8*a^2*c^4 - b^6 + 8*a^3*c^3 - b^3*(-(4*a*c - b^2)^3)^{ \\
& (1/2)} + b^4*c^2 - 6*a*b^2*c^3 + b*c^2*(-(4*a*c - b^2)^3)^{(1/2)} - 18*a^2*b^2 \\
& *c^2 + 8*a*b^4*c + 2*a*b*c*(-(4*a*c - b^2)^3)^{(1/2)))/(2*(a^4*b^4 - a^2*b^6 \\
& + 16*a^4*c^4 + 32*a^5*c^3 + 16*a^6*c^2 + 10*a^3*b^4*c - 8*a^5*b^2*c + a^2*b \\
& ^4*c^2 - 8*a^3*b^2*c^3 - 32*a^4*b^2*c^2)))^{(1/2)} * i - (((8*a^2*c^4 - b^6 + \\
& 8*a^3*c^3 - b^3*(-(4*a*c - b^2)^3)^{(1/2)} + b^4*c^2 - 6*a*b^2*c^3 + b*c^2*(-
\end{aligned}$$

$$\begin{aligned}
& ((4ac - b^2)^3)^{1/2} - 18a^2b^2c^2 + 8ab^4c + 2abc*(-(4ac - b^2)^3)^{1/2} \\
& ) / (2*(a^4b^4 - a^2b^6 + 16a^4c^4 + 32a^5c^3 + 16a^6c^2 + 10a^3b^4c - 8a^5b^2c + a^2b^4c^2 - 8a^3b^2c^3 - 32a^4b^2c^2)) \\
& )^{1/2} * (24576a^5c^5 - 49152ab^5 - 32768b^5c + 24576b^6 + 32768a^2b^4 - 8192a^3b^3 + 180224a^2c^4 + 253952a^3c^3 + 98304a^4c^2 - 8192b^2c^4 + 32768b^3c^3 - 16384b^4c^2 - (\tan(x/2)*(49152ab^6 - 65536a^6c + 16384b^6c - 16384b^7 - 65536a^2b^5 + 65536a^3b^4 - 49152a^4b^3 + 16384a^5b^2 - 147456a^2c^5 + 212992a^3c^4 + 671744a^4c^3 + 245760a^5c^2 - 16384b^4c^3 + 16384b^5c^2 + 98304ab^2c^4 - 65536ab^3c^3 - 180224ab^4c^2 + 49152a^2b^4c - 393216a^2b^4c - 1081344a^3b^3c^3 + 475136a^3b^3c - 802816a^4b^3c^2 - 327680a^4b^2c + 344064a^2b^2c^3 + 180224a^2b^3c^2 + 557056a^3b^2c^2 + 98304ab^5c + 196608a^5b^3c) + ((8a^2c^4 - b^6 + 8a^3c^3 - b^3*(-(4ac - b^2)^3)^{1/2} + b^4c^2 - 6ab^2c^3 + bc^2*(-(4ac - b^2)^3)^{1/2} - 18a^2b^2c^2 + 8ab^4c + 2abc*(-(4ac - b^2)^3)^{1/2}) / (2*(a^4b^4 - a^2b^6 + 16a^4c^4 + 32a^5c^3 + 16a^6c^2 + 10a^3b^4c - 8a^5b^2c + a^2b^4c^2 - 8a^3b^2c^3 - 32a^4b^2c^2)))^{1/2} * (24576a^2b^6 - 57344a^3b^5 + 40960a^4b^4 - 8192a^5b^3 + 98304a^3c^5 + 425984a^4c^4 + 557056a^5c^3 + 229376a^6c^2 - 49152a^2b^5c - 196608a^3b^4c - 90112a^3b^4c - 622592a^4b^3c + 327680a^4b^3c - 393216a^5b^3c^2 - 221184a^5b^2c + \tan(x/2)*((8a^2c^4 - b^6 + 8a^3c^3 - b^3*(-(4ac - b^2)^3)^{1/2} + b^4c^2 - 6ab^2c^3 + bc^2*(-(4ac - b^2)^3)^{1/2} - 18a^2b^2c^2 + 8ab^4c + 2abc*(-(4ac - b^2)^3)^{1/2}) / (2*(a^4b^4 - a^2b^6 + 16a^4c^4 + 32a^5c^3 + 16a^6c^2 + 10a^3b^4c - 8a^5b^2c + a^2b^4c^2 - 8a^3b^2c^3 - 32a^4b^2c^2)))^{1/2} * (65536a^8c + 16384a^2b^7 - 49152a^3b^6 + 65536a^4b^5 - 65536a^5b^4 + 49152a^6b^3 - 16384a^7b^2 + 196608a^4c^5 + 131072a^5c^4 - 262144a^6c^3 - 131072a^7c^2 - 16384a^2b^6c - 114688a^3b^5c - 65536a^4b^4c + 376832a^4b^4c + 720896a^5b^3c - 409600a^5b^3c + 589824a^6b^2c + 294912a^6b^2c + 16384a^2b^4c^3 - 16384a^2b^5c^2 - 114688a^3b^2c^4 + 81920a^3b^3c^3 + 196608a^3b^4c^2 - 557056a^4b^2c^3 + 16384a^4b^3c^2 - 655360a^5b^2c^2 - 196608a^7b^3c) - 24576a^2b^2c^4 + 49152a^2b^3c^3 - 106496a^3b^2c^3 + 352256a^3b^3c^2 - 172032a^4b^2c^2 + 32768a^6b^3c) * ((8a^2c^4 - b^6 + 8a^3c^3 - b^3*(-(4ac - b^2)^3)^{1/2} + b^4c^2 - 6ab^2c^3 + bc^2*(-(4ac - b^2)^3)^{1/2} - 18a^2b^2c^2 + 8ab^4c + 2abc*(-(4ac - b^2)^3)^{1/2}) / (2*(a^4b^4 - a^2b^6 + 16a^4c^4 + 32a^5c^3 + 16a^6c^2 + 10a^3b^4c - 8a^5b^2c + a^2b^4c^2 - 8a^3b^2c^3 - 32a^4b^2c^2)))^{1/2} + 24576ab^2c^3 + 237568ab^3c^2 - 458752a^2b^3c^3 + 262144a^2b^3c - 270336a^3b^3c^2 - 155648a^3b^2c + 16384a^2b^2c^2 - 122880ab^3c^4 - 114688ab^4c + 32768a^4b^3c) - \tan(x/2)*(8192ab^4 - 73728a^4c - 57344b^4c + 40960b^4c - 8192b^5 + 24576c^5 - 81920a^2c^3 + 16384a^3c^2 + 81920b^2c^3 - 81920b^3c^2 - 81920ab^2c^2 + 81920a^2b^3c^2 - 32768a^2b^2c + 163840ab^3c^3) * ((8a^2c^4 - b^6 + 8a^3c^3 - b^3*(-(4ac - b^2)^3)^{1/2} + b^4c^2 - 6ab^2c^3 + bc^2*(-(4ac - b^2)^3)^{1/2} - 18a^2b^2c^2 + 8ab^4c + 2abc*(-(4ac - b^2)^3)^{1/2}) / (2*(a^4b^4 - a^2b^6 + 16a^4c^4 + 32a^5c^3 + 16a^6c^2 + 10a^3b^4c - 8a^5b^2c + a^2b^4c^2 - 8a^3b^2c^3 - 32a^4b^2c^2)))^{1/2}
\end{aligned}$$



$$\begin{aligned}
& - b^2)^3)^{(1/2)) / (2*(a^4*b^4 - a^2*b^6 + 16*a^4*c^4 + 32*a^5*c^3 + 16*a^6*c^2 + 10*a^3*b^4*c - 8*a^5*b^2*c + a^2*b^4*c^2 - 8*a^3*b^2*c^3 - 32*a^4*b^2*c^2)))^{(1/2)*ii) / (((8*a^2*c^4 - b^6 + 8*a^3*c^3 - b^3*(-(4*a*c - b^2)^3)^{(1/2)} + b^4*c^2 - 6*a*b^2*c^3 + b*c^2*(-(4*a*c - b^2)^3)^{(1/2)} - 18*a^2*b^2*c^2 + 8*a*b^4*c + 2*a*b*c*(-(4*a*c - b^2)^3)^{(1/2)}) / (2*(a^4*b^4 - a^2*b^6 + 16*a^4*c^4 + 32*a^5*c^3 + 16*a^6*c^2 + 10*a^3*b^4*c - 8*a^5*b^2*c + a^2*b^4*c^2 - 8*a^3*b^2*c^3 - 32*a^4*b^2*c^2)))^{(1/2)* (24576*a*c^5 - 49152*a*b^5 - 32768*b^5*c + 24576*b^6 + 32768*a^2*b^4 - 8192*a^3*b^3 + 180224*a^2*c^4 + 253952*a^3*c^3 + 98304*a^4*c^2 - 8192*b^2*c^4 + 32768*b^3*c^3 - 16384*b^4*c^2 + (\tan(x/2)*(49152*a*b^6 - 65536*a^6*c + 16384*b^6*c - 16384*b^7 - 65536*a^2*b^5 + 65536*a^3*b^4 - 49152*a^4*b^3 + 16384*a^5*b^2 - 147456*a^2*c^5 + 212992*a^3*c^4 + 671744*a^4*c^3 + 245760*a^5*c^2 - 16384*b^4*c^3 + 16384*b^5*c^2 + 98304*a*b^2*c^4 - 65536*a*b^3*c^3 - 180224*a*b^4*c^2 + 49152*a^2*b*c^4 - 393216*a^2*b^4*c - 1081344*a^3*b*c^3 + 475136*a^3*b^3*c - 802816*a^4*b*c^2 - 327680*a^4*b^2*c + 344064*a^2*b^2*c^3 + 180224*a^2*b^3*c^2 + 557056*a^3*b^2*c^2 + 98304*a*b^5*c + 196608*a^5*b*c) + ((8*a^2*c^4 - b^6 + 8*a^3*c^3 - b^3*(-(4*a*c - b^2)^3)^{(1/2)} + b^4*c^2 - 6*a*b^2*c^3 + b*c^2*(-(4*a*c - b^2)^3)^{(1/2)} - 18*a^2*b^2*c^2 + 8*a*b^4*c + 2*a*b*c*(-(4*a*c - b^2)^3)^{(1/2)}) / (2*(a^4*b^4 - a^2*b^6 + 16*a^4*c^4 + 32*a^5*c^3 + 16*a^6*c^2 + 10*a^3*b^4*c - 8*a^5*b^2*c + a^2*b^4*c^2 - 8*a^3*b^2*c^3 - 32*a^4*b^2*c^2)))^{(1/2)* (57344*a^3*b^5 - 24576*a^2*b^6 - 40960*a^4*b^4 + 8192*a^5*b^3 - 98304*a^3*c^5 - 425984*a^4*c^4 - 557056*a^5*c^3 - 229376*a^6*c^2 + 49152*a^2*b^5*c + 196608*a^3*b*c^4 + 90112*a^3*b^4*c + 622592*a^4*b*c^3 - 327680*a^4*b^3*c + 393216*a^5*b*c^2 + 221184*a^5*b^2*c + \tan(x/2)*((8*a^2*c^4 - b^6 + 8*a^3*c^3 - b^3*(-(4*a*c - b^2)^3)^{(1/2)} + b^4*c^2 - 6*a*b^2*c^3 + b*c^2*(-(4*a*c - b^2)^3)^{(1/2)} - 18*a^2*b^2*c^2 + 8*a*b^4*c + 2*a*b*c*(-(4*a*c - b^2)^3)^{(1/2)}) / (2*(a^4*b^4 - a^2*b^6 + 16*a^4*c^4 + 32*a^5*c^3 + 16*a^6*c^2 + 10*a^3*b^4*c - 8*a^5*b^2*c + a^2*b^4*c^2 - 8*a^3*b^2*c^3 - 32*a^4*b^2*c^2)))^{(1/2)* (65536*a^8*c + 16384*a^2*b^7 - 49152*a^3*b^6 + 65536*a^4*b^5 - 65536*a^5*b^4 + 49152*a^6*b^3 - 16384*a^7*b^2 + 196608*a^4*c^5 + 131072*a^5*c^4 - 262144*a^6*c^3 - 131072*a^7*c^2 - 16384*a^2*b^6*c - 114688*a^3*b^5*c - 65536*a^4*b^4*c + 376832*a^4*b^4*c + 720896*a^5*b^3*c - 409600*a^5*b^3*c + 589824*a^6*b^2*c + 294912*a^6*b^2*c + 16384*a^2*b^4*c^3 - 16384*a^2*b^5*c^2 - 114688*a^3*b^2*c^4 + 81920*a^3*b^3*c^3 + 196608*a^3*b^4*c^2 - 557056*a^4*b^2*c^3 + 16384*a^4*b^3*c^2 - 655360*a^5*b^2*c^2 - 196608*a^7*b*c) + 24576*a^2*b^2*c^4 - 49152*a^2*b^3*c^3 + 106496*a^3*b^2*c^3 - 352256*a^3*b^3*c^2 + 172032*a^4*b^2*c^2 - 32768*a^6*b*c) * ((8*a^2*c^4 - b^6 + 8*a^3*c^3 - b^3*(-(4*a*c - b^2)^3)^{(1/2)} + b^4*c^2 - 6*a*b^2*c^3 + b*c^2*(-(4*a*c - b^2)^3)^{(1/2)} - 18*a^2*b^2*c^2 + 8*a*b^4*c + 2*a*b*c*(-(4*a*c - b^2)^3)^{(1/2)}) / (2*(a^4*b^4 - a^2*b^6 + 16*a^4*c^4 + 32*a^5*c^3 + 16*a^6*c^2 + 10*a^3*b^4*c - 8*a^5*b^2*c + a^2*b^4*c^2 - 8*a^3*b^2*c^3 - 32*a^4*b^2*c^2)))^{(1/2)} + 24576*a*b^2*c^3 + 237568*a*b^3*c^2 - 458752*a^2*b*c^3 + 262144*a^2*b^3*c - 270336*a^3*b*c^2 - 155648*a^3*b^2*c + 16384*a^2*b^2*c^2 - 122880*a*b*c^4 - 114688*a^4*c + 32768*a^4*b*c) + \tan(x/2)*(8192*a*b^4 - 73728*a*c^4 - 57344*b*c^4 + 40960*b^4*c - 8192*b^5 + 24576*c^5 - 81920*a^2*c^3 + 16384*a^3*c^2 + 81920
\end{aligned}$$

$$\begin{aligned}
& *b^2*c^3 - 81920*b^3*c^2 - 81920*a*b^2*c^2 + 81920*a^2*b*c^2 - 32768*a^2*b^2*c + 163840*a*b*c^3) * ((8*a^2*c^4 - b^6 + 8*a^3*c^3 - b^3*(-(4*a*c - b^2)^3)^{(1/2)} + b^4*c^2 - 6*a*b^2*c^3 + b*c^2*(-(4*a*c - b^2)^3)^{(1/2)} - 18*a^2*b^2*c^2 + 8*a*b^4*c + 2*a*b*c*(-(4*a*c - b^2)^3)^{(1/2)}) / (2*(a^4*b^4 - a^2*b^6 + 16*a^4*c^4 + 32*a^5*c^3 + 16*a^6*c^2 + 10*a^3*b^4*c - 8*a^5*b^2*c + a^2*b^4*c^2 - 8*a^3*b^2*c^3 - 32*a^4*b^2*c^2)))^{(1/2)} + (((8*a^2*c^4 - b^6 + 8*a^3*c^3 - b^3*(-(4*a*c - b^2)^3)^{(1/2)} + b^4*c^2 - 6*a*b^2*c^3 + b*c^2*(-(4*a*c - b^2)^3)^{(1/2)} - 18*a^2*b^2*c^2 + 8*a*b^4*c + 2*a*b*c*(-(4*a*c - b^2)^3)^{(1/2)}) / (2*(a^4*b^4 - a^2*b^6 + 16*a^4*c^4 + 32*a^5*c^3 + 16*a^6*c^2 + 10*a^3*b^4*c - 8*a^5*b^2*c + a^2*b^4*c^2 - 8*a^3*b^2*c^3 - 32*a^4*b^2*c^2)))^{(1/2)} * (24576*a*c^5 - 49152*a*b^5 - 32768*b^5*c + 24576*b^6 + 32768*a^2*b^4 - 8192*a^3*b^3 + 180224*a^2*c^4 + 253952*a^3*c^3 + 98304*a^4*c^2 - 8192*b^2*c^4 + 32768*b^3*c^3 - 16384*b^4*c^2 - (\tan(x/2)*(49152*a*b^6 - 65536*a^6*c + 16384*b^6*c - 16384*b^7 - 65536*a^2*b^5 + 65536*a^3*b^4 - 49152*a^4*b^3 + 16384*a^5*b^2 - 147456*a^2*c^5 + 212992*a^3*c^4 + 671744*a^4*c^3 + 245760*a^5*c^2 - 16384*b^4*c^3 + 16384*b^5*c^2 + 98304*a*b^2*c^4 - 65536*a*b^3*c^3 - 180224*a*b^4*c^2 + 49152*a^2*b*c^4 - 393216*a^2*b^4*c - 1081344*a^3*b*c^3 + 475136*a^3*b^3*c - 802816*a^4*b*c^2 - 327680*a^4*b^2*c + 344064*a^2*b^2*c^3 + 180224*a^2*b^3*c^2 + 557056*a^3*b^2*c^2 + 98304*a*b^5*c + 196608*a^5*b*c) + ((8*a^2*c^4 - b^6 + 8*a^3*c^3 - b^3*(-(4*a*c - b^2)^3)^{(1/2)} + b^4*c^2 - 6*a*b^2*c^3 + b*c^2*(-(4*a*c - b^2)^3)^{(1/2)} - 18*a^2*b^2*c^2 + 8*a*b^4*c + 2*a*b*c*(-(4*a*c - b^2)^3)^{(1/2)}) / (2*(a^4*b^4 - a^2*b^6 + 16*a^4*c^4 + 32*a^5*c^3 + 16*a^6*c^2 + 10*a^3*b^4*c - 8*a^5*b^2*c + a^2*b^4*c^2 - 8*a^3*b^2*c^3 - 32*a^4*b^2*c^2)))^{(1/2)} * (24576*a^2*b^6 - 57344*a^3*b^5 + 40960*a^4*b^4 - 8192*a^5*b^3 + 98304*a^3*c^5 + 425984*a^4*c^4 + 557056*a^5*c^3 + 229376*a^6*c^2 - 49152*a^2*b^5*c - 196608*a^3*b*c^4 - 90112*a^3*b^4*c - 622592*a^4*b*c^3 + 327680*a^4*b^3*c - 393216*a^5*b*c^2 - 221184*a^5*b^2*c + \tan(x/2)*((8*a^2*c^4 - b^6 + 8*a^3*c^3 - b^3*(-(4*a*c - b^2)^3)^{(1/2)} + b^4*c^2 - 6*a*b^2*c^3 + b*c^2*(-(4*a*c - b^2)^3)^{(1/2)} - 18*a^2*b^2*c^2 + 8*a*b^4*c + 2*a*b*c*(-(4*a*c - b^2)^3)^{(1/2)}) / (2*(a^4*b^4 - a^2*b^6 + 16*a^4*c^4 + 32*a^5*c^3 + 16*a^6*c^2 + 10*a^3*b^4*c - 8*a^5*b^2*c + a^2*b^4*c^2 - 8*a^3*b^2*c^3 - 32*a^4*b^2*c^2)))^{(1/2)} * (65536*a^8*c + 16384*a^2*b^7 - 49152*a^3*b^6 + 65536*a^4*b^5 - 65536*a^5*b^4 + 49152*a^6*b^3 - 16384*a^7*b^2 + 196608*a^4*c^5 + 131072*a^5*c^4 - 262144*a^6*c^3 - 131072*a^7*c^2 - 16384*a^2*b^6*c - 114688*a^3*b^5*c - 65536*a^4*b*c^4 + 376832*a^4*b^4*c + 720896*a^5*b*c^3 - 409600*a^5*b^3*c + 589824*a^6*b*c^2 + 294912*a^6*b^2*c + 16384*a^2*b^4*c^3 - 16384*a^2*b^5*c^2 - 114688*a^3*b^2*c^4 + 81920*a^3*b^3*c^3 + 196608*a^3*b^4*c^2 - 557056*a^4*b^2*c^3 + 16384*a^4*b^3*c^2 - 655360*a^5*b^2*c^2 - 196608*a^7*b*c) - 24576*a^2*b^2*c^4 + 49152*a^2*b^3*c^3 - 106496*a^3*b^2*c^3 + 352256*a^3*b^3*c^2 - 172032*a^4*b^2*c^2 + 32768*a^6*b*c) * ((8*a^2*c^4 - b^6 + 8*a^3*c^3 - b^3*(-(4*a*c - b^2)^3)^{(1/2)} + b^4*c^2 - 6*a*b^2*c^3 + b*c^2*(-(4*a*c - b^2)^3)^{(1/2)} - 18*a^2*b^2*c^2 + 8*a*b^4*c + 2*a*b*c*(-(4*a*c - b^2)^3)^{(1/2)}) / (2*(a^4*b^4 - a^2*b^6 + 16*a^4*c^4 + 32*a^5*c^3 + 16*a^6*c^2 + 10*a^3*b^4*c - 8*a^5*b^2*c + a^2*b^4*c^2 - 8*a^3*b^2*c^3 - 32*a^4*b^2*c^2)))^{(1/2)} + 24576*a*b^2*c^3 + 237568*a*b^3*c^2 - 458752*a^2*
\end{aligned}$$

$$\begin{aligned}
& b^3c^3 + 262144a^2b^3c - 270336a^3b^2c^2 - 155648a^3b^2c + 16384a^2b^2c^2 - 122880a^2b^2c^2 - 114688a^2b^2c^2 + 32768a^4b^2c - \tan(x/2) \cdot (8192 \\
& a^2b^4 - 73728a^2c^4 - 57344b^2c^4 + 40960b^4c - 8192b^5 + 24576c^5 - 81920a^2c^3 + 16384a^3c^2 + 81920b^2c^3 - 81920b^3c^2 - 81920a^2b^2c^2 + 81920a^2b^2c^2 - 32768a^2b^2c + 163840a^2b^2c^3) \cdot ((8a^2c^4 - b^6 + 8a^3c^3 - b^3 \cdot (-4ac - b^2)^3)^{1/2} + b^4c^2 - 6a^2b^2c^3 + b^2c^2 \cdot (-4ac - b^2)^3)^{1/2} - 18a^2b^2c^2 + 8a^2b^4c + 2a^2b^2c \cdot (-4ac - b^2)^3)^{1/2} / (2(a^4b^4 - a^2b^6 + 16a^4c^4 + 32a^5c^3 + 16a^6c^2 + 10a^3b^4c - 8a^5b^2c + a^2b^4c^2 - 8a^3b^2c^3 - 32a^4b^2c^2))^{1/2} - 49152a^2c^3 + 65536b^2c^3 - 49152c^4 - 16384b^2c^2 + 16384a^2b^2c^2) \cdot ((8a^2c^4 - b^6 + 8a^3c^3 - b^3 \cdot (-4ac - b^2)^3)^{1/2} + b^4c^2 - 6a^2b^2c^3 + b^2c^2 \cdot (-4ac - b^2)^3)^{1/2} - 18a^2b^2c^2 + 8a^2b^4c + 2a^2b^2c \cdot (-4ac - b^2)^3)^{1/2} / (2(a^4b^4 - a^2b^6 + 16a^4c^4 + 32a^5c^3 + 16a^6c^2 + 10a^3b^4c - 8a^5b^2c + a^2b^4c^2 - 8a^3b^2c^3 - 32a^4b^2c^2))^{1/2} * 2i + \operatorname{atan}(-((\tan(x/2) \cdot (8192a^2b^4 - 73728a^2c^4 - 57344b^2c^4 + 40960b^4c - 8192b^5 + 24576c^5 - 81920a^2c^3 + 16384a^3c^2 + 81920b^2c^3 - 81920b^3c^2 - 81920a^2b^2c^2 + 81920a^2b^2c^2 - 32768a^2b^2c + 163840a^2b^2c^3) + (-b^6 - 8a^2c^4 - 8a^3c^3 - b^3 \cdot (-4ac - b^2)^3)^{1/2} - b^4c^2 + 6a^2b^2c^3 + b^2c^2 \cdot (-4ac - b^2)^3)^{1/2} + 18a^2b^2c^2 - 8a^2b^4c + 2a^2b^2c \cdot (-4ac - b^2)^3)^{1/2} / (2(a^4b^4 - a^2b^6 + 16a^4c^4 + 32a^5c^3 + 16a^6c^2 + 10a^3b^4c - 8a^5b^2c + a^2b^4c^2 - 8a^3b^2c^3 - 32a^4b^2c^2))^{1/2} * (24576a^2c^5 - 49152a^2b^5 - 32768b^5c + 24576b^6 + ((-b^6 - 8a^2c^4 - 8a^3c^3 - b^3 \cdot (-4ac - b^2)^3)^{1/2} - b^4c^2 + 6a^2b^2c^3 + b^2c^2 \cdot (-4ac - b^2)^3)^{1/2} + 18a^2b^2c^2 - 8a^2b^4c + 2a^2b^2c \cdot (-4ac - b^2)^3)^{1/2} / (2(a^4b^4 - a^2b^6 + 16a^4c^4 + 32a^5c^3 + 16a^6c^2 + 10a^3b^4c - 8a^5b^2c + a^2b^4c^2 - 8a^3b^2c^3 - 32a^4b^2c^2))^{1/2} * (57344a^3b^5 - 24576a^2b^6 - 40960a^4b^4 + 8192a^5b^3 - 98304a^3c^5 - 425984a^4c^4 - 557056a^5c^3 - 229376a^6c^2 + 49152a^2b^5c + 196608a^3b^2c^4 + 90112a^3b^4c + 622592a^4b^2c^3 - 327680a^4b^3c + 393216a^5b^2c^2 + 221184a^5b^2c + 24576a^2b^2c^4 - 49152a^2b^3c^3 + 106496a^3b^2c^3 - 352256a^3b^3c^2 + 172032a^4b^2c^2 - 32768a^6b^2c + \tan(x/2) \cdot (-b^6 - 8a^2c^4 - 8a^3c^3 - b^3 \cdot (-4ac - b^2)^3)^{1/2} - b^4c^2 + 6a^2b^2c^3 + b^2c^2 \cdot (-4ac - b^2)^3)^{1/2} + 18a^2b^2c^2 - 8a^2b^4c + 2a^2b^2c \cdot (-4ac - b^2)^3)^{1/2} / (2(a^4b^4 - a^2b^6 + 16a^4c^4 + 32a^5c^3 + 16a^6c^2 + 10a^3b^4c - 8a^5b^2c + a^2b^4c^2 - 8a^3b^2c^3 - 32a^4b^2c^2))^{1/2} * (65536a^8c + 16384a^2b^7 - 49152a^3b^6 + 65536a^4b^5 - 65536a^5b^4 + 49152a^6b^3 - 16384a^7b^2 + 196608a^4c^5 + 131072a^5c^4 - 262144a^6c^3 - 131072a^7c^2 - 16384a^2b^6c - 114688a^3b^5c - 65536a^4b^4c + 376832a^4b^4c + 720896a^5b^3c^3 - 409600a^5b^3c + 589824a^6b^2c^2 + 294912a^6b^2c + 16384a^2b^4c^3 - 16384a^2b^5c^2 - 114688a^3b^2c^4 + 81920a^3b^3c^3 + 196608a^3b^4c^2 - 557056a^4b^2c^3 + 16384a^4b^3c^2 - 655360a^5b^2c^2 - 196608a^7b^2c) + \tan(x/2) \cdot (49152a^2b^6 - 65536a^6c + 16384b^6c - 16384b^7 - 65536a^2b^5 + 65536a^3b^4 - 491
\end{aligned}$$

$$\begin{aligned}
& 52a^4b^3 + 16384a^5b^2 - 147456a^2c^5 + 212992a^3c^4 + 671744a^4c^3 + 245760a^5c^2 - 16384b^4c^3 + 16384b^5c^2 + 98304ab^2c^4 - 65536ab^3c^3 - 180224ab^4c^2 + 49152a^2b^3c^4 - 393216a^2b^4c - 1081344a^3b^3c^3 + 475136a^3b^3c - 802816a^4b^3c^2 - 327680a^4b^2c + 344064a^2b^2c^3 + 180224a^2b^3c^2 + 557056a^3b^2c^2 + 98304ab^5c + 196608a^5b^3c) \cdot (-b^6 - 8a^2c^4 - 8a^3c^3 - b^3(-4ac - b^2)^3)^{(1/2)} - b^4c^2 + 6ab^2c^3 + b^2c^2(-4ac - b^2)^3)^{(1/2)} + 18a^2b^2c^2 - 8ab^4c + 2ab^3c(-4ac - b^2)^3)^{(1/2)}) / (2(a^4b^4 - a^2b^6 + 16a^4c^4 + 32a^5c^3 + 16a^6c^2 + 10a^3b^4c - 8a^5b^2c + a^2b^4c^2 - 8a^3b^2c^3 - 32a^4b^2c^2))^{(1/2)} + 32768a^2b^4 - 8192a^3b^3 + 180224a^2c^4 + 253952a^3c^3 + 98304a^4c^2 - 8192b^2c^4 + 32768b^3c^3 - 16384b^4c^2 + 24576ab^2c^3 + 237568ab^3c^2 - 458752a^2b^3c^3 + 262144a^2b^3c - 270336a^3b^3c^2 - 155648a^3b^2c + 16384a^2b^2c^2 - 122880ab^3c^4 - 114688ab^4c + 32768a^4b^3c) \cdot (-b^6 - 8a^2c^4 - 8a^3c^3 - b^3(-4ac - b^2)^3)^{(1/2)} - b^4c^2 + 6ab^2c^3 + b^2c^2(-4ac - b^2)^3)^{(1/2)} + 18a^2b^2c^2 - 8ab^4c + 2ab^3c(-4ac - b^2)^3)^{(1/2)}) / (2(a^4b^4 - a^2b^6 + 16a^4c^4 + 32a^5c^3 + 16a^6c^2 + 10a^3b^4c - 8a^5b^2c + a^2b^4c^2 - 8a^3b^2c^3 - 32a^4b^2c^2))^{(1/2)} * i + (\tan(x/2) * (8192ab^4 - 73728a^2c^4 - 57344b^3c^4 + 40960b^4c - 8192b^5 + 24576c^5 - 81920a^2c^3 + 16384a^3c^2 + 81920b^2c^3 - 81920b^3c^2 - 81920ab^2c^2 + 81920a^2b^3c^2 - 32768a^2b^2c + 163840ab^3c^3) - (-b^6 - 8a^2c^4 - 8a^3c^3 - b^3(-4ac - b^2)^3)^{(1/2)} - b^4c^2 + 6ab^2c^3 + b^2c^2(-4ac - b^2)^3)^{(1/2)} + 18a^2b^2c^2 - 8ab^4c + 2ab^3c(-4ac - b^2)^3)^{(1/2)}) / (2(a^4b^4 - a^2b^6 + 16a^4c^4 + 32a^5c^3 + 16a^6c^2 + 10a^3b^4c - 8a^5b^2c + a^2b^4c^2 - 8a^3b^2c^3 - 32a^4b^2c^2))^{(1/2)} * (24576a^5c^5 - 49152ab^5 - 32768b^5c + 24576b^6 - ((-b^6 - 8a^2c^4 - 8a^3c^3 - b^3(-4ac - b^2)^3)^{(1/2)} - b^4c^2 + 6ab^2c^3 + b^2c^2(-4ac - b^2)^3)^{(1/2)} + 18a^2b^2c^2 - 8ab^4c + 2ab^3c(-4ac - b^2)^3)^{(1/2)}) / (2(a^4b^4 - a^2b^6 + 16a^4c^4 + 32a^5c^3 + 16a^6c^2 + 10a^3b^4c - 8a^5b^2c + a^2b^4c^2 - 8a^3b^2c^3 - 32a^4b^2c^2))^{(1/2)} * (24576a^2b^6 - 57344a^3b^5 + 40960a^4b^4 - 8192a^5b^3 + 98304a^3c^5 + 425984a^4c^4 + 557056a^5c^3 + 229376a^6c^2 - 49152a^2b^5c - 196608a^3b^3c^4 - 90112a^3b^4c - 622592a^4b^3c^3 + 327680a^4b^3c - 393216a^5b^3c^2 - 221184a^5b^2c - 24576a^2b^2c^4 + 49152a^2b^3c^3 - 106496a^3b^2c^3 + 352256a^3b^3c^2 - 172032a^4b^2c^2 + 32768a^6b^3c + \tan(x/2) * (-b^6 - 8a^2c^4 - 8a^3c^3 - b^3(-4ac - b^2)^3)^{(1/2)} - b^4c^2 + 6ab^2c^3 + b^2c^2(-4ac - b^2)^3)^{(1/2)} + 18a^2b^2c^2 - 8ab^4c + 2ab^3c(-4ac - b^2)^3)^{(1/2)}) / (2(a^4b^4 - a^2b^6 + 16a^4c^4 + 32a^5c^3 + 16a^6c^2 + 10a^3b^4c - 8a^5b^2c + a^2b^4c^2 - 8a^3b^2c^3 - 32a^4b^2c^2))^{(1/2)} * (65536a^8c + 16384a^2b^7 - 49152a^3b^6 + 65536a^4b^5 - 65536a^5b^4 + 49152a^6b^3 - 16384a^7b^2 + 196608a^4c^5 + 131072a^5c^4 - 262144a^6c^3 - 131072a^7c^2 - 16384a^2b^6c - 114688a^3b^5c - 65536a^4b^4c + 376832a^4b^4c + 720896a^5b^3c^3 - 409600a^5b^3c + 589824a^6b^3c^2 + 294912a^6b^2c + 16384a^2b^4
\end{aligned}$$

$$\begin{aligned}
& *c^3 - 16384*a^2*b^5*c^2 - 114688*a^3*b^2*c^4 + 81920*a^3*b^3*c^3 + 196608* \\
& a^3*b^4*c^2 - 557056*a^4*b^2*c^3 + 16384*a^4*b^3*c^2 - 655360*a^5*b^2*c^2 - \\
& 196608*a^7*b*c)) + \tan(x/2)*(49152*a*b^6 - 65536*a^6*c + 16384*b^6*c - 163 \\
& 84*b^7 - 65536*a^2*b^5 + 65536*a^3*b^4 - 49152*a^4*b^3 + 16384*a^5*b^2 - 14 \\
& 7456*a^2*c^5 + 212992*a^3*c^4 + 671744*a^4*c^3 + 245760*a^5*c^2 - 16384*b^4 \\
& *c^3 + 16384*b^5*c^2 + 98304*a*b^2*c^4 - 65536*a*b^3*c^3 - 180224*a*b^4*c^2 \\
& + 49152*a^2*b*c^4 - 393216*a^2*b^4*c - 1081344*a^3*b*c^3 + 475136*a^3*b^3*c \\
& c - 802816*a^4*b*c^2 - 327680*a^4*b^2*c + 344064*a^2*b^2*c^3 + 180224*a^2*b \\
& ^3*c^2 + 557056*a^3*b^2*c^2 + 98304*a*b^5*c + 196608*a^5*b*c)) * (-(b^6 - 8*a \\
& ^2*c^4 - 8*a^3*c^3 - b^3*(-(4*a*c - b^2)^3)^(1/2) - b^4*c^2 + 6*a*b^2*c^3 + \\
& b*c^2*(-(4*a*c - b^2)^3)^(1/2) + 18*a^2*b^2*c^2 - 8*a*b^4*c + 2*a*b*c*(-(4 \\
& *a*c - b^2)^3)^(1/2)) / (2*(a^4*b^4 - a^2*b^6 + 16*a^4*c^4 + 32*a^5*c^3 + 16* \\
& a^6*c^2 + 10*a^3*b^4*c - 8*a^5*b^2*c + a^2*b^4*c^2 - 8*a^3*b^2*c^3 - 32*a^4 \\
& *b^2*c^2)))^(1/2) + 32768*a^2*b^4 - 8192*a^3*b^3 + 180224*a^2*c^4 + 253952* \\
& a^3*c^3 + 98304*a^4*c^2 - 8192*b^2*c^4 + 32768*b^3*c^3 - 16384*b^4*c^2 + 24 \\
& 576*a*b^2*c^3 + 237568*a*b^3*c^2 - 458752*a^2*b*c^3 + 262144*a^2*b^3*c - 27 \\
& 0336*a^3*b*c^2 - 155648*a^3*b^2*c + 16384*a^2*b^2*c^2 - 122880*a*b*c^4 - 11 \\
& 4688*a*b^4*c + 32768*a^4*b*c)) * (-(b^6 - 8*a^2*c^4 - 8*a^3*c^3 - b^3*(-(4*a* \\
& c - b^2)^3)^(1/2) - b^4*c^2 + 6*a*b^2*c^3 + b*c^2*(-(4*a*c - b^2)^3)^(1/2) \\
& + 18*a^2*b^2*c^2 - 8*a*b^4*c + 2*a*b*c*(-(4*a*c - b^2)^3)^(1/2)) / (2*(a^4*b^ \\
& 4 - a^2*b^6 + 16*a^4*c^4 + 32*a^5*c^3 + 16*a^6*c^2 + 10*a^3*b^4*c - 8*a^5*b \\
& ^2*c + a^2*b^4*c^2 - 8*a^3*b^2*c^3 - 32*a^4*b^2*c^2)))^(1/2) * i) / ((\tan(x/2) \\
& *(8192*a*b^4 - 73728*a*c^4 - 57344*b*c^4 + 40960*b^4*c - 8192*b^5 + 24576*c \\
& ^5 - 81920*a^2*c^3 + 16384*a^3*c^2 + 81920*b^2*c^3 - 81920*b^3*c^2 - 81920* \\
& a*b^2*c^2 + 81920*a^2*b*c^2 - 32768*a^2*b^2*c + 163840*a*b*c^3) - (-(b^6 - \\
& 8*a^2*c^4 - 8*a^3*c^3 - b^3*(-(4*a*c - b^2)^3)^(1/2) - b^4*c^2 + 6*a*b^2*c^ \\
& 3 + b*c^2*(-(4*a*c - b^2)^3)^(1/2) + 18*a^2*b^2*c^2 - 8*a*b^4*c + 2*a*b*c*(- \\
& -(4*a*c - b^2)^3)^(1/2)) / (2*(a^4*b^4 - a^2*b^6 + 16*a^4*c^4 + 32*a^5*c^3 + \\
& 16*a^6*c^2 + 10*a^3*b^4*c - 8*a^5*b^2*c + a^2*b^4*c^2 - 8*a^3*b^2*c^3 - 32* \\
& a^4*b^2*c^2)))^(1/2) * (24576*a*c^5 - 49152*a*b^5 - 32768*b^5*c + 24576*b^6 - \\
& ((-(b^6 - 8*a^2*c^4 - 8*a^3*c^3 - b^3*(-(4*a*c - b^2)^3)^(1/2) - b^4*c^2 + \\
& 6*a*b^2*c^3 + b*c^2*(-(4*a*c - b^2)^3)^(1/2) + 18*a^2*b^2*c^2 - 8*a*b^4*c \\
& + 2*a*b*c*(-(4*a*c - b^2)^3)^(1/2)) / (2*(a^4*b^4 - a^2*b^6 + 16*a^4*c^4 + 32 \\
& *a^5*c^3 + 16*a^6*c^2 + 10*a^3*b^4*c - 8*a^5*b^2*c + a^2*b^4*c^2 - 8*a^3*b^ \\
& ^2*c^3 - 32*a^4*b^2*c^2)))^(1/2) * (24576*a^2*b^6 - 57344*a^3*b^5 + 40960*a^4* \\
& b^4 - 8192*a^5*b^3 + 98304*a^3*c^5 + 425984*a^4*c^4 + 557056*a^5*c^3 + 2293 \\
& 76*a^6*c^2 - 49152*a^2*b^5*c - 196608*a^3*b*c^4 - 90112*a^3*b^4*c - 622592* \\
& a^4*b*c^3 + 327680*a^4*b^3*c - 393216*a^5*b*c^2 - 221184*a^5*b^2*c - 24576* \\
& a^2*b^2*c^4 + 49152*a^2*b^3*c^3 - 106496*a^3*b^2*c^3 + 352256*a^3*b^3*c^2 - \\
& 172032*a^4*b^2*c^2 + 32768*a^6*b*c + \tan(x/2)*(-(b^6 - 8*a^2*c^4 - 8*a^3*c \\
& ^3 - b^3*(-(4*a*c - b^2)^3)^(1/2) - b^4*c^2 + 6*a*b^2*c^3 + b*c^2*(-(4*a*c \\
& - b^2)^3)^(1/2) + 18*a^2*b^2*c^2 - 8*a*b^4*c + 2*a*b*c*(-(4*a*c - b^2)^3)^( \\
& 1/2)) / (2*(a^4*b^4 - a^2*b^6 + 16*a^4*c^4 + 32*a^5*c^3 + 16*a^6*c^2 + 10*a^3 \\
& *b^4*c - 8*a^5*b^2*c + a^2*b^4*c^2 - 8*a^3*b^2*c^3 - 32*a^4*b^2*c^2)))^(1/2) \\
& ) * (65536*a^8*c + 16384*a^2*b^7 - 49152*a^3*b^6 + 65536*a^4*b^5 - 65536*a^5*
\end{aligned}$$

$$\begin{aligned}
& b^4 + 49152a^6b^3 - 16384a^7b^2 + 196608a^4c^5 + 131072a^5c^4 - 262 \\
& 144a^6c^3 - 131072a^7c^2 - 16384a^2b^6c - 114688a^3b^5c - 65536a \\
& ^4b^4c + 376832a^4b^4c + 720896a^5b^3c^3 - 409600a^5b^3c + 589824a \\
& ^6b^3c^2 + 294912a^6b^2c + 16384a^2b^4c^3 - 16384a^2b^5c^2 - 1146 \\
& 88a^3b^2c^4 + 81920a^3b^3c^3 + 196608a^3b^4c^2 - 557056a^4b^2c^ \\
& ^3 + 16384a^4b^3c^2 - 655360a^5b^2c^2 - 196608a^7b^3c) + \tan(x/2)*(4 \\
& 9152a^6b^6 - 65536a^6c + 16384b^6c - 16384b^7 - 65536a^2b^5 + 65536a \\
& ^3b^4 - 49152a^4b^3 + 16384a^5b^2 - 147456a^2c^5 + 212992a^3c^4 + \\
& 671744a^4c^3 + 245760a^5c^2 - 16384b^4c^3 + 16384b^5c^2 + 98304a^* \\
& b^2c^4 - 65536a^*b^3c^3 - 180224a^*b^4c^2 + 49152a^2b^*c^4 - 393216a^2 \\
& *b^4c - 1081344a^3b^*c^3 + 475136a^3b^3c - 802816a^4b^*c^2 - 327680a \\
& ^4b^2c + 344064a^2b^2c^3 + 180224a^2b^3c^2 + 557056a^3b^2c^2 + 9 \\
& 8304a^*b^5c + 196608a^5b^*c) * (-(b^6 - 8a^2c^4 - 8a^3c^3 - b^3*(-(4a \\
& *c - b^2)^3)^{1/2} - b^4c^2 + 6a^*b^2c^3 + b^*c^2*(-(4a*c - b^2)^3)^{1/2} \\
& + 18a^2b^2c^2 - 8a^*b^4c + 2a^*b^*c*(-(4a*c - b^2)^3)^{1/2}) / (2*(a^4b \\
& ^4 - a^2b^6 + 16a^4c^4 + 32a^5c^3 + 16a^6c^2 + 10a^3b^4c - 8a^5* \\
& b^2c + a^2b^4c^2 - 8a^3b^2c^3 - 32a^4b^2c^2)))^{1/2} + 32768a^2b \\
& ^4 - 8192a^3b^3 + 180224a^2c^4 + 253952a^3c^3 + 98304a^4c^2 - 8192* \\
& b^2c^4 + 32768b^3c^3 - 16384b^4c^2 + 24576a^*b^2c^3 + 237568a^*b^3c^ \\
& ^2 - 458752a^2b^*c^3 + 262144a^2b^3c - 270336a^3b^*c^2 - 155648a^3b^2 \\
& *c + 16384a^2b^2c^2 - 122880a^*b^*c^4 - 114688a^*b^4c + 32768a^4b^*c) * \\
& (-(b^6 - 8a^2c^4 - 8a^3c^3 - b^3*(-(4a*c - b^2)^3)^{1/2} - b^4c^2 + 6 \\
& *a^*b^2c^3 + b^*c^2*(-(4a*c - b^2)^3)^{1/2} + 18a^2b^2c^2 - 8a^*b^4c + \\
& 2a^*b^*c*(-(4a*c - b^2)^3)^{1/2}) / (2*(a^4b^4 - a^2b^6 + 16a^4c^4 + 32a \\
& ^5c^3 + 16a^6c^2 + 10a^3b^4c - 8a^5b^2c + a^2b^4c^2 - 8a^3b^2* \\
& c^3 - 32a^4b^2c^2)))^{1/2} - (\tan(x/2)*(8192a^*b^4 - 73728a^*c^4 - 57344 \\
& *b^*c^4 + 40960b^4c - 8192b^5 + 24576c^5 - 81920a^2c^3 + 16384a^3c^2 \\
& + 81920b^2c^3 - 81920b^3c^2 - 81920a^*b^2c^2 + 81920a^2b^*c^2 - 3276 \\
& 8a^2b^2c + 163840a^*b^*c^3) + (-(b^6 - 8a^2c^4 - 8a^3c^3 - b^3*(-(4a \\
& *c - b^2)^3)^{1/2} - b^4c^2 + 6a^*b^2c^3 + b^*c^2*(-(4a*c - b^2)^3)^{1/2} \\
& + 18a^2b^2c^2 - 8a^*b^4c + 2a^*b^*c*(-(4a*c - b^2)^3)^{1/2}) / (2*(a^4b \\
& ^4 - a^2b^6 + 16a^4c^4 + 32a^5c^3 + 16a^6c^2 + 10a^3b^4c - 8a^5* \\
& b^2c + a^2b^4c^2 - 8a^3b^2c^3 - 32a^4b^2c^2)))^{1/2} * (24576a^*c^5 \\
& - 49152a^*b^5 - 32768b^5c + 24576b^6 + ((-(b^6 - 8a^2c^4 - 8a^3c^3 - \\
& b^3*(-(4a*c - b^2)^3)^{1/2} - b^4c^2 + 6a^*b^2c^3 + b^*c^2*(-(4a*c - b^ \\
& 2)^3)^{1/2} + 18a^2b^2c^2 - 8a^*b^4c + 2a^*b^*c*(-(4a*c - b^2)^3)^{1/2} \\
& ) / (2*(a^4b^4 - a^2b^6 + 16a^4c^4 + 32a^5c^3 + 16a^6c^2 + 10a^3b^4 \\
& *c - 8a^5b^2c + a^2b^4c^2 - 8a^3b^2c^3 - 32a^4b^2c^2)))^{1/2} * (5 \\
& 7344a^3b^5 - 24576a^2b^6 - 40960a^4b^4 + 8192a^5b^3 - 98304a^3c^5 \\
& - 425984a^4c^4 - 557056a^5c^3 - 229376a^6c^2 + 49152a^2b^5c + 196 \\
& 608a^3b^4c + 90112a^3b^4c + 622592a^4b^3c^3 - 327680a^4b^3c + 393 \\
& 216a^5b^3c^2 + 221184a^5b^2c + 24576a^2b^2c^4 - 49152a^2b^3c^3 + \\
& 106496a^3b^2c^3 - 352256a^3b^3c^2 + 172032a^4b^2c^2 - 32768a^6b^* \\
& c + \tan(x/2)*(-(b^6 - 8a^2c^4 - 8a^3c^3 - b^3*(-(4a*c - b^2)^3)^{1/2} \\
& - b^4c^2 + 6a^*b^2c^3 + b^*c^2*(-(4a*c - b^2)^3)^{1/2} + 18a^2b^2c^2 -
\end{aligned}$$

$$\begin{aligned}
& 8*a*b^4*c + 2*a*b*c*(-(4*a*c - b^2)^3)^{(1/2)})/(2*(a^4*b^4 - a^2*b^6 + 16*a^4*c^4 + 32*a^5*c^3 + 16*a^6*c^2 + 10*a^3*b^4*c - 8*a^5*b^2*c + a^2*b^4*c^2 - 8*a^3*b^2*c^3 - 32*a^4*b^2*c^2)))^{(1/2)}*(65536*a^8*c + 16384*a^2*b^7 - 49152*a^3*b^6 + 65536*a^4*b^5 - 65536*a^5*b^4 + 49152*a^6*b^3 - 16384*a^7*b^2 + 196608*a^4*c^5 + 131072*a^5*c^4 - 262144*a^6*c^3 - 131072*a^7*c^2 - 16384*a^2*b^6*c - 114688*a^3*b^5*c - 65536*a^4*b^4*c + 376832*a^4*b^4*c + 720896*a^5*b^3*c^3 - 409600*a^5*b^3*c + 589824*a^6*b^2*c^2 + 294912*a^6*b^2*c + 16384*a^2*b^4*c^3 - 16384*a^2*b^5*c^2 - 114688*a^3*b^2*c^4 + 81920*a^3*b^3*c^3 + 196608*a^3*b^4*c^2 - 557056*a^4*b^2*c^3 + 16384*a^4*b^3*c^2 - 655360*a^5*b^2*c^2 - 196608*a^7*b*c)) + \tan(x/2)*(49152*a*b^6 - 65536*a^6*c + 16384*b^6*c - 16384*b^7 - 65536*a^2*b^5 + 65536*a^3*b^4 - 49152*a^4*b^3 + 16384*a^5*b^2 - 147456*a^2*c^5 + 212992*a^3*c^4 + 671744*a^4*c^3 + 245760*a^5*c^2 - 16384*b^4*c^3 + 16384*b^5*c^2 + 98304*a*b^2*c^4 - 65536*a*b^3*c^3 - 180224*a*b^4*c^2 + 49152*a^2*b*c^4 - 393216*a^2*b^4*c - 1081344*a^3*b*c^3 + 475136*a^3*b^3*c - 802816*a^4*b*c^2 - 327680*a^4*b^2*c + 344064*a^2*b^2*c^3 + 180224*a^2*b^3*c^2 + 557056*a^3*b^2*c^2 + 98304*a*b^5*c + 196608*a^5*b*c))*(-(b^6 - 8*a^2*c^4 - 8*a^3*c^3 - b^3*(-(4*a*c - b^2)^3)^{(1/2)} - b^4*c^2 + 6*a*b^2*c^3 + b*c^2*(-(4*a*c - b^2)^3)^{(1/2)} + 18*a^2*b^2*c^2 - 8*a*b^4*c + 2*a*b*c*(-(4*a*c - b^2)^3)^{(1/2)})/(2*(a^4*b^4 - a^2*b^6 + 16*a^4*c^4 + 32*a^5*c^3 + 16*a^6*c^2 + 10*a^3*b^4*c - 8*a^5*b^2*c + a^2*b^4*c^2 - 8*a^3*b^2*c^3 - 32*a^4*b^2*c^2)))^{(1/2)} + 32768*a^2*b^4 - 8192*a^3*b^3 + 180224*a^2*c^4 + 253952*a^3*c^3 + 98304*a^4*c^2 - 8192*b^2*c^4 + 32768*b^3*c^3 - 16384*b^4*c^2 + 24576*a*b^2*c^3 + 237568*a*b^3*c^2 - 458752*a^2*b*c^3 + 262144*a^2*b^3*c - 270336*a^3*b*c^2 - 155648*a^3*b^2*c + 16384*a^2*b^2*c^2 - 122880*a*b*c^4 - 114688*a*b^4*c + 32768*a^4*b*c))*(-(b^6 - 8*a^2*c^4 - 8*a^3*c^3 - b^3*(-(4*a*c - b^2)^3)^{(1/2)} - b^4*c^2 + 6*a*b^2*c^3 + b*c^2*(-(4*a*c - b^2)^3)^{(1/2)} + 18*a^2*b^2*c^2 - 8*a*b^4*c + 2*a*b*c*(-(4*a*c - b^2)^3)^{(1/2)})/(2*(a^4*b^4 - a^2*b^6 + 16*a^4*c^4 + 32*a^5*c^3 + 16*a^6*c^2 + 10*a^3*b^4*c - 8*a^5*b^2*c + a^2*b^4*c^2 - 8*a^3*b^2*c^3 - 32*a^4*b^2*c^2)))^{(1/2)} + 49152*a*c^3 - 65536*b*c^3 + 49152*c^4 + 16384*b^2*c^2 - 16384*a*b*c^2))*(-(b^6 - 8*a^2*c^4 - 8*a^3*c^3 - b^3*(-(4*a*c - b^2)^3)^{(1/2)} - b^4*c^2 + 6*a*b^2*c^3 + b*c^2*(-(4*a*c - b^2)^3)^{(1/2)} + 18*a^2*b^2*c^2 - 8*a*b^4*c + 2*a*b*c*(-(4*a*c - b^2)^3)^{(1/2)})/(2*(a^4*b^4 - a^2*b^6 + 16*a^4*c^4 + 32*a^5*c^3 + 16*a^6*c^2 + 10*a^3*b^4*c - 8*a^5*b^2*c + a^2*b^4*c^2 - 8*a^3*b^2*c^3 - 32*a^4*b^2*c^2)))^{(1/2)}*2i
\end{aligned}$$

### 3.19 $\int \frac{\sec^2(x)}{a+b \cos(x)+c \cos^2(x)} dx$

Optimal result	296
Rubi [A] (verified)	296
Mathematica [A] (verified)	299
Maple [A] (verified)	299
Fricas [B] (verification not implemented)	300
Sympy [F]	300
Maxima [F]	300
Giac [B] (verification not implemented)	301
Mupad [B] (verification not implemented)	304

#### Optimal result

Integrand size = 19, antiderivative size = 275

$$\int \frac{\sec^2(x)}{a+b \cos(x)+c \cos^2(x)} dx = \frac{2bc \left(1 + \frac{b^2-2ac}{b\sqrt{b^2-4ac}}\right) \arctan\left(\frac{\sqrt{b-2c-\sqrt{b^2-4ac}} \tan\left(\frac{x}{2}\right)}{\sqrt{b+2c-\sqrt{b^2-4ac}}}\right)}{a^2 \sqrt{b-2c-\sqrt{b^2-4ac}} \sqrt{b+2c-\sqrt{b^2-4ac}}} + \frac{2bc \left(1 - \frac{b^2-2ac}{b\sqrt{b^2-4ac}}\right) \arctan\left(\frac{\sqrt{b-2c+\sqrt{b^2-4ac}} \tan\left(\frac{x}{2}\right)}{\sqrt{b+2c+\sqrt{b^2-4ac}}}\right)}{a^2 \sqrt{b-2c+\sqrt{b^2-4ac}} \sqrt{b+2c+\sqrt{b^2-4ac}}} - \frac{b \operatorname{arctanh}(\sin(x))}{a^2} + \frac{\tan(x)}{a}$$

```
[Out] -b*arctanh(sin(x))/a^2+2*b*c*arctan((b-2*c-(-4*a*c+b^2)^(1/2))^(1/2)*tan(1/2*x)/(b+2*c-(-4*a*c+b^2)^(1/2))^(1/2))*(1+(-2*a*c+b^2)/b/(-4*a*c+b^2)^(1/2))/a^2/(b-2*c-(-4*a*c+b^2)^(1/2))^(1/2)/(b+2*c-(-4*a*c+b^2)^(1/2))^(1/2)+2*b*c*arctan((b-2*c+(-4*a*c+b^2)^(1/2))^(1/2)*tan(1/2*x)/(b+2*c+(-4*a*c+b^2)^(1/2))^(1/2))*(1+(2*a*c-b^2)/b/(-4*a*c+b^2)^(1/2))/a^2/(b-2*c+(-4*a*c+b^2)^(1/2))^(1/2)/(b+2*c+(-4*a*c+b^2)^(1/2))^(1/2)+tan(x)/a
```

#### Rubi [A] (verified)

Time = 1.30 (sec) , antiderivative size = 275, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 7,  $\frac{\text{number of rules}}{\text{integrand size}} = 0.368$ , Rules used



= {3338, 3374, 2738, 211, 3855, 3852, 8}

$$\int \frac{\sec^2(x)}{a + b \cos(x) + c \cos^2(x)} dx = \frac{2bc \left( \frac{b^2 - 2ac}{b\sqrt{b^2 - 4ac}} + 1 \right) \arctan \left( \frac{\tan(\frac{x}{2}) \sqrt{-\sqrt{b^2 - 4ac} + b - 2c}}{\sqrt{-\sqrt{b^2 - 4ac} + b + 2c}} \right)}{a^2 \sqrt{-\sqrt{b^2 - 4ac} + b - 2c} \sqrt{-\sqrt{b^2 - 4ac} + b + 2c}} + \frac{2bc \left( 1 - \frac{b^2 - 2ac}{b\sqrt{b^2 - 4ac}} \right) \arctan \left( \frac{\tan(\frac{x}{2}) \sqrt{\sqrt{b^2 - 4ac} + b - 2c}}{\sqrt{\sqrt{b^2 - 4ac} + b + 2c}} \right)}{a^2 \sqrt{\sqrt{b^2 - 4ac} + b - 2c} \sqrt{\sqrt{b^2 - 4ac} + b + 2c}} - \frac{b \operatorname{arctanh}(\sin(x))}{a^2} + \frac{\tan(x)}{a}$$

[In] Int[Sec[x]^2/(a + b\*Cos[x] + c\*Cos[x]^2), x]

[Out] (2\*b\*c\*(1 + (b^2 - 2\*a\*c)/(b\*Sqrt[b^2 - 4\*a\*c]))\*ArcTan[(Sqrt[b - 2\*c - Sqrt[b^2 - 4\*a\*c]]\*Tan[x/2])/Sqrt[b + 2\*c - Sqrt[b^2 - 4\*a\*c]]]/(a^2\*Sqrt[b - 2\*c - Sqrt[b^2 - 4\*a\*c]]\*Sqrt[b + 2\*c - Sqrt[b^2 - 4\*a\*c]]) + (2\*b\*c\*(1 - (b^2 - 2\*a\*c)/(b\*Sqrt[b^2 - 4\*a\*c]))\*ArcTan[(Sqrt[b - 2\*c + Sqrt[b^2 - 4\*a\*c]]\*Tan[x/2])/Sqrt[b + 2\*c + Sqrt[b^2 - 4\*a\*c]]]/(a^2\*Sqrt[b - 2\*c + Sqrt[b^2 - 4\*a\*c]]\*Sqrt[b + 2\*c + Sqrt[b^2 - 4\*a\*c]]) - (b\*ArcTanh[Sin[x]])/a^2 + Tan[x]/a

#### Rule 8

Int[a\_, x\_Symbol] := Simp[a\*x, x] /; FreeQ[a, x]

#### Rule 211

Int[((a\_) + (b\_.)\*(x\_)^2)^(-1), x\_Symbol] := Simp[(Rt[a/b, 2]/a)\*ArcTan[x/Rt[a/b, 2]], x] /; FreeQ[{a, b}, x] && PosQ[a/b]

#### Rule 2738

Int[((a\_) + (b\_.)\*sin[Pi/2 + (c\_.) + (d\_.)\*(x\_)])^(-1), x\_Symbol] := With[{e = FreeFactors[Tan[(c + d\*x)/2], x]}, Dist[2\*(e/d), Subst[Int[1/(a + b + (a - b)\*e^2\*x^2), x], x, Tan[(c + d\*x)/2]/e], x] /; FreeQ[{a, b, c, d}, x] && NeQ[a^2 - b^2, 0]

#### Rule 3338

Int[cos[(d\_.) + (e\_.)\*(x\_)]^(m\_.)\*((a\_.) + cos[(d\_.) + (e\_.)\*(x\_)]^(n\_.)\*(b\_.) + cos[(d\_.) + (e\_.)\*(x\_)]^(n2\_.)\*(c\_.))^(p\_), x\_Symbol] := Int[ExpandTrig[cos[d + e\*x]^m\*(a + b\*cos[d + e\*x]^n + c\*cos[d + e\*x]^(2\*n))^p, x], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[n2, 2\*n] && NeQ[b^2 - 4\*a\*c, 0] && IntegersQ[m, n, p]

#### Rule 3374

```
Int[(cos[(d_.) + (e_.)*(x_.)]*(B_.) + (A_.))/((a_.) + cos[(d_.) + (e_.)*(x_.)]
*(b_.) + cos[(d_.) + (e_.)*(x_.)]^2*(c_.)), x_Symbol] := Module[{q = Rt[b^2
- 4*a*c, 2]}, Dist[B + (b*B - 2*A*c)/q, Int[1/(b + q + 2*c*Cos[d + e*x]), x
], x] + Dist[B - (b*B - 2*A*c)/q, Int[1/(b - q + 2*c*Cos[d + e*x]), x], x]]
/; FreeQ[{a, b, c, d, e, A, B}, x] && NeQ[b^2 - 4*a*c, 0]
```

### Rule 3852

```
Int[csc[(c_.) + (d_.)*(x_.)]^(n_), x_Symbol] := Dist[-d^(-1), Subst[Int[Expa
ndIntegrand[(1 + x^2)^(n/2 - 1), x], x], x, Cot[c + d*x]], x] /; FreeQ[{c,
d}, x] && IGtQ[n/2, 0]
```

### Rule 3855

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

### Rubi steps

$$\begin{aligned}
\text{integral} &= \int \left( \frac{b^2 \left(1 - \frac{ac}{b^2}\right) + bc \cos(x)}{a^2 (a + b \cos(x) + c \cos^2(x))} - \frac{b \sec(x)}{a^2} + \frac{\sec^2(x)}{a} \right) dx \\
&= \frac{\int \frac{b^2 \left(1 - \frac{ac}{b^2}\right) + bc \cos(x)}{a + b \cos(x) + c \cos^2(x)} dx}{a^2} + \frac{\int \sec^2(x) dx}{a} - \frac{b \int \sec(x) dx}{a^2} \\
&= -\frac{\text{barctanh}(\sin(x))}{a^2} - \frac{\text{Subst}(\int 1 dx, x, -\tan(x))}{a} \\
&\quad + \frac{\left(c \left(b - \frac{b^2 - 2ac}{\sqrt{b^2 - 4ac}}\right)\right) \int \frac{1}{b + \sqrt{b^2 - 4ac} + 2c \cos(x)} dx}{a^2} \\
&\quad + \frac{\left(c \left(b + \frac{b^2 - 2ac}{\sqrt{b^2 - 4ac}}\right)\right) \int \frac{1}{b - \sqrt{b^2 - 4ac} + 2c \cos(x)} dx}{a^2} \\
&= -\frac{\text{barctanh}(\sin(x))}{a^2} + \frac{\tan(x)}{a} \\
&\quad + \frac{\left(2c \left(b - \frac{b^2 - 2ac}{\sqrt{b^2 - 4ac}}\right)\right) \text{Subst}\left(\int \frac{1}{b + 2c + \sqrt{b^2 - 4ac} + (b - 2c + \sqrt{b^2 - 4ac})x^2} dx, x, \tan\left(\frac{x}{2}\right)\right)}{a^2} \\
&\quad + \frac{\left(2c \left(b + \frac{b^2 - 2ac}{\sqrt{b^2 - 4ac}}\right)\right) \text{Subst}\left(\int \frac{1}{b + 2c - \sqrt{b^2 - 4ac} + (b - 2c - \sqrt{b^2 - 4ac})x^2} dx, x, \tan\left(\frac{x}{2}\right)\right)}{a^2}
\end{aligned}$$

$$\begin{aligned}
& 2c\left(b + \frac{b^2-2ac}{\sqrt{b^2-4ac}}\right) \arctan\left(\frac{\sqrt{b-2c-\sqrt{b^2-4ac}}\tan\left(\frac{x}{2}\right)}{\sqrt{b+2c-\sqrt{b^2-4ac}}}\right) \\
= & \frac{2c\left(b - \frac{b^2-2ac}{\sqrt{b^2-4ac}}\right) \arctan\left(\frac{\sqrt{b-2c+\sqrt{b^2-4ac}}\tan\left(\frac{x}{2}\right)}{\sqrt{b+2c+\sqrt{b^2-4ac}}}\right)}{a^2\sqrt{b-2c-\sqrt{b^2-4ac}}\sqrt{b+2c-\sqrt{b^2-4ac}}} - \frac{\operatorname{barctanh}(\sin(x))}{a^2} + \frac{\tan(x)}{a} \\
& + \frac{2c\left(b - \frac{b^2-2ac}{\sqrt{b^2-4ac}}\right) \arctan\left(\frac{\sqrt{b-2c+\sqrt{b^2-4ac}}\tan\left(\frac{x}{2}\right)}{\sqrt{b+2c+\sqrt{b^2-4ac}}}\right)}{a^2\sqrt{b-2c+\sqrt{b^2-4ac}}\sqrt{b+2c+\sqrt{b^2-4ac}}}
\end{aligned}$$

### Mathematica [A] (verified)

Time = 1.90 (sec) , antiderivative size = 348, normalized size of antiderivative = 1.27

$$\begin{aligned}
& \int \frac{\sec^2(x)}{a + b \cos(x) + c \cos^2(x)} dx \\
= & \frac{\sqrt{2}c(-b^2+2ac+b\sqrt{b^2-4ac}) \operatorname{arctanh}\left(\frac{(b-2c+\sqrt{b^2-4ac})\tan\left(\frac{x}{2}\right)}{\sqrt{-2b^2+4c(a+c)-2b\sqrt{b^2-4ac}}}\right)}{\sqrt{b^2-4ac}\sqrt{-b^2+2c(a+c)-b\sqrt{b^2-4ac}}} + \frac{\sqrt{2}c(b^2-2ac+b\sqrt{b^2-4ac}) \operatorname{arctanh}\left(\frac{(-b+2c+\sqrt{b^2-4ac})\tan\left(\frac{x}{2}\right)}{\sqrt{-2b^2+4c(a+c)+2b\sqrt{b^2-4ac}}}\right)}{\sqrt{b^2-4ac}\sqrt{-b^2+2c(a+c)+b\sqrt{b^2-4ac}}} \\
& \frac{\tan(x)}{a}
\end{aligned}$$

[In] Integrate[Sec[x]^2/(a + b\*Cos[x] + c\*Cos[x]^2), x]

[Out]  $(-\left(\sqrt{2}c(-b^2+2ac+b\sqrt{b^2-4ac})\operatorname{ArcTanh}\left[\frac{(b-2c+\sqrt{b^2-4ac})\tan[x/2]}{\sqrt{-2b^2+4c(a+c)-2b\sqrt{b^2-4ac}}}\right]\right)/\left(\sqrt{b^2-4ac}\sqrt{-b^2+2c(a+c)-b\sqrt{b^2-4ac}}\right)) + \left(\sqrt{2}c(b^2-2ac+b\sqrt{b^2-4ac})\operatorname{ArcTanh}\left[\frac{(-b+2c+\sqrt{b^2-4ac})\tan[x/2]}{\sqrt{-2b^2+4c(a+c)+2b\sqrt{b^2-4ac}}}\right]\right)/\left(\sqrt{b^2-4ac}\sqrt{-b^2+2c(a+c)+b\sqrt{b^2-4ac}}\right) + b\operatorname{Log}[\operatorname{Cos}[x/2] - \operatorname{Sin}[x/2]] - b\operatorname{Log}[\operatorname{Cos}[x/2] + \operatorname{Sin}[x/2]] + (a\operatorname{Sin}[x/2])/(\operatorname{Cos}[x/2] - \operatorname{Sin}[x/2]) + (a\operatorname{Sin}[x/2])/(\operatorname{Cos}[x/2] + \operatorname{Sin}[x/2]))/a^2$

### Maple [A] (verified)

Time = 4.66 (sec) , antiderivative size = 354, normalized size of antiderivative = 1.29

method	result
default	$ \frac{2(a-b+c) \left( (-\sqrt{-4ac+b^2}ac + \sqrt{-4ac+b^2}b^2 - \sqrt{-4ac+b^2}bc + 3cab - 2ac^2 - b^3 + b^2c) \operatorname{arctanh}\left(\frac{(-a+b-c)\tan\left(\frac{x}{2}\right)}{\sqrt{(\sqrt{-4ac+b^2}-a+c)(a-b+c)}}\right) \right) (-\sqrt{-4ac+b^2}ac + \sqrt{-4ac+b^2}b^2 - \sqrt{-4ac+b^2}bc + 3cab - 2ac^2 - b^3 + b^2c)}{2\sqrt{-4ac+b^2}(a-b+c)\sqrt{(\sqrt{-4ac+b^2}-a+c)(a-b+c)}} + \frac{\tan(x)}{a} $
risch	Expression too large to display

[In] int(sec(x)^2/(a+cos(x)\*b+c\*cos(x)^2), x, method=\_RETURNVERBOSE)

[Out]  $2/a^2*(a-b+c)*(1/2*(-(-4*a*c+b^2)^{(1/2)}*a*c+(-4*a*c+b^2)^{(1/2)}*b^2-(-4*a*c+b^2)^{(1/2)}*b*c+3*c*a*b-2*a*c^2-b^3+b^2*c)/(-4*a*c+b^2)^{(1/2)}/(a-b+c)/((( -4*a*c+b^2)^{(1/2)}-a+c)*(a-b+c))^{(1/2)}*\operatorname{arctanh}((-a+b-c)*\tan(1/2*x)/((( -4*a*c+b^2)^{(1/2)}-a+c)*(a-b+c))^{(1/2)})+1/2*(-(-4*a*c+b^2)^{(1/2)}*a*c+(-4*a*c+b^2)^{(1/2)}*b^2-(-4*a*c+b^2)^{(1/2)}*b*c-3*c*a*b+2*a*c^2+b^3-b^2*c)/(-4*a*c+b^2)^{(1/2)}/(a-b+c)/((( -4*a*c+b^2)^{(1/2)}+a-c)*(a-b+c))^{(1/2)}*\operatorname{arctan}((a-b+c)*\tan(1/2*x)/((( -4*a*c+b^2)^{(1/2)}+a-c)*(a-b+c))^{(1/2)}))-1/a/(\tan(1/2*x)+1)-b/a^2*\ln(\tan(1/2*x)+1)-1/a/(\tan(1/2*x)-1)+b/a^2*\ln(\tan(1/2*x)-1)$

## Fricas [B] (verification not implemented)

Leaf count of result is larger than twice the leaf count of optimal. 6851 vs.  $2(234) = 468$ .

Time = 257.77 (sec) , antiderivative size = 6851, normalized size of antiderivative = 24.91

$$\int \frac{\sec^2(x)}{a + b \cos(x) + c \cos^2(x)} dx = \text{Too large to display}$$

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

[Out] Too large to include

## Sympy [F]

$$\int \frac{\sec^2(x)}{a + b \cos(x) + c \cos^2(x)} dx = \int \frac{\sec^2(x)}{a + b \cos(x) + c \cos^2(x)} dx$$

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

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

## Maxima [F]

$$\int \frac{\sec^2(x)}{a + b \cos(x) + c \cos^2(x)} dx = \int \frac{\sec(x)^2}{c \cos(x)^2 + b \cos(x) + a} dx$$

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

[Out]  $1/2*(2*(a^2*\cos(2*x)^2 + a^2*\sin(2*x)^2 + 2*a^2*\cos(2*x) + a^2)*\operatorname{integrate}(2*(2*b^2*c*\cos(3*x)^2 + 2*b^2*c*\cos(x)^2 + 2*b^2*c*\sin(3*x)^2 + 2*b^2*c*\sin(x)^2 + b*c^2*\cos(x) + 4*(2*a*b^2 - a*c^2 - (2*a^2 - b^2)*c)*\cos(2*x)^2 + 4*(2*a*b^2 - a*c^2 - (2*a^2 - b^2)*c)*\sin(2*x)^2 + 2*(2*b^3 + b*c^2)*\sin(2*x)*\sin(x) + (b*c^2*\cos(3*x) + b*c^2*\cos(x) + 2*(b^2*c - a*c^2)*\cos(2*x))*\cos($

$4*x) + (4*b^2*c*cos(x) + b*c^2 + 2*(2*b^3 + b*c^2)*cos(2*x))*cos(3*x) + 2*($   
 $b^2*c - a*c^2 + (2*b^3 + b*c^2)*cos(x))*cos(2*x) + (b*c^2*sin(3*x) + b*c^2*$   
 $sin(x) + 2*(b^2*c - a*c^2)*sin(2*x))*sin(4*x) + 2*(2*b^2*c*sin(x) + (2*b^3$   
 $+ b*c^2)*sin(2*x))*sin(3*x))/(a^2*c^2*cos(4*x)^2 + 4*a^2*b^2*cos(3*x)^2 + 4$   
 $*a^2*b^2*cos(x)^2 + a^2*c^2*sin(4*x)^2 + 4*a^2*b^2*sin(3*x)^2 + 4*a^2*b^2*s$   
 $in(x)^2 + 4*a^2*b*c*cos(x) + a^2*c^2 + 4*(4*a^4 + 4*a^3*c + a^2*c^2)*cos(2*$   
 $x)^2 + 4*(4*a^4 + 4*a^3*c + a^2*c^2)*sin(2*x)^2 + 8*(2*a^3*b + a^2*b*c)*sin$   
 $(2*x)*sin(x) + 2*(2*a^2*b*c*cos(3*x) + 2*a^2*b*c*cos(x) + a^2*c^2 + 2*(2*a^$   
 $3*c + a^2*c^2)*cos(2*x))*cos(4*x) + 4*(2*a^2*b^2*cos(x) + a^2*b*c + 2*(2*a^$   
 $3*b + a^2*b*c)*cos(2*x))*cos(3*x) + 4*(2*a^3*c + a^2*c^2 + 2*(2*a^3*b + a^2$   
 $*b*c)*cos(x))*cos(2*x) + 4*(a^2*b*c*sin(3*x) + a^2*b*c*sin(x) + (2*a^3*c +$   
 $a^2*c^2)*sin(2*x))*sin(4*x) + 8*(a^2*b^2*sin(x) + (2*a^3*b + a^2*b*c)*sin(2$   
 $*x))*sin(3*x)), x) - (b*cos(2*x)^2 + b*sin(2*x)^2 + 2*b*cos(2*x) + b)*log(c$   
 $os(x)^2 + sin(x)^2 + 2*sin(x) + 1) + (b*cos(2*x)^2 + b*sin(2*x)^2 + 2*b*cos$   
 $(2*x) + b)*log(cos(x)^2 + sin(x)^2 - 2*sin(x) + 1) + 4*a*sin(2*x))/(a^2*cos$   
 $(2*x)^2 + a^2*sin(2*x)^2 + 2*a^2*cos(2*x) + a^2)$

## Giac [B] (verification not implemented)

Leaf count of result is larger than twice the leaf count of optimal. 4784 vs. 2(234) = 468.

Time = 2.90 (sec) , antiderivative size = 4784, normalized size of antiderivative = 17.40

$$\int \frac{\sec^2(x)}{a + b \cos(x) + c \cos^2(x)} dx = \text{Too large to display}$$

[In] integrate(sec(x)^2/(a+b\*cos(x)+c\*cos(x)^2),x, algorithm="giac")

[Out]  $(2*a^2*b^5 - 2*b^7 - 14*a^3*b^3*c - 6*a^2*b^4*c + 26*a*b^5*c - 2*b^6*c + 24$   
 $*a^4*b*c^2 + 36*a^3*b^2*c^2 - 108*a^2*b^3*c^2 + 16*a*b^4*c^2 + 2*b^5*c^2 -$   
 $48*a^4*c^3 + 144*a^3*b*c^3 - 24*a^2*b^2*c^3 - 22*a*b^3*c^3 + 2*b^4*c^3 - 32$   
 $*a^3*c^4 + 56*a^2*b*c^4 - 12*a*b^2*c^4 + 16*a^2*c^5 + 3*sqrt(a^2 - a*b + b*$   
 $c - c^2 + sqrt(b^2 - 4*a*c))*(a - b + c))*a^2*b^4 - 2*sqrt(a^2 - a*b + b*c -$   
 $c^2 + sqrt(b^2 - 4*a*c))*(a - b + c))*a*b^5 - 5*sqrt(a^2 - a*b + b*c - c^2$   
 $+ sqrt(b^2 - 4*a*c))*(a - b + c))*b^6 - 15*sqrt(a^2 - a*b + b*c - c^2 + sqrt$   
 $(b^2 - 4*a*c))*(a - b + c))*a^3*b^2*c + 13*sqrt(a^2 - a*b + b*c - c^2 + sqrt$   
 $(b^2 - 4*a*c))*(a - b + c))*a^2*b^3*c + 37*sqrt(a^2 - a*b + b*c - c^2 + sqrt$   
 $(b^2 - 4*a*c))*(a - b + c))*a*b^4*c + sqrt(a^2 - a*b + b*c - c^2 + sqrt(b^2$   
 $- 4*a*c))*(a - b + c))*b^5*c + 12*sqrt(a^2 - a*b + b*c - c^2 + sqrt(b^2 - 4*$   
 $a*c))*(a - b + c))*a^4*c^2 - 20*sqrt(a^2 - a*b + b*c - c^2 + sqrt(b^2 - 4*a*$   
 $c))*(a - b + c))*a^3*b*c^2 - 82*sqrt(a^2 - a*b + b*c - c^2 + sqrt(b^2 - 4*a*$   
 $c))*(a - b + c))*a^2*b^2*c^2 + 4*sqrt(a^2 - a*b + b*c - c^2 + sqrt(b^2 - 4*a$   
 $*c))*(a - b + c))*a*b^3*c^2 + sqrt(a^2 - a*b + b*c - c^2 + sqrt(b^2 - 4*a*c)$   
 $)*(a - b + c))*b^4*c^2 + 56*sqrt(a^2 - a*b + b*c - c^2 + sqrt(b^2 - 4*a*c))*$   
 $(a - b + c))*a^3*c^3 - 32*sqrt(a^2 - a*b + b*c - c^2 + sqrt(b^2 - 4*a*c))*(a$   
 $- b + c))*a^2*b*c^3 + sqrt(a^2 - a*b + b*c - c^2 + sqrt(b^2 - 4*a*c))*(a - b$

$$\begin{aligned}
& + c)) * a * b^2 * c^3 - 5 * \sqrt{a^2 - a * b + b * c - c^2 + \sqrt{b^2 - 4 * a * c}} * (a - b \\
& + c)) * b^3 * c^3 - 20 * \sqrt{a^2 - a * b + b * c - c^2 + \sqrt{b^2 - 4 * a * c}} * (a - b + \\
& c)) * a^2 * c^4 + 20 * \sqrt{a^2 - a * b + b * c - c^2 + \sqrt{b^2 - 4 * a * c}} * (a - b + c) \\
& ) * a * b * c^4 + 3 * \sqrt{a^2 - a * b + b * c - c^2 + \sqrt{b^2 - 4 * a * c}} * (a - b + c)) * s \\
& \text{qrt}(b^2 - 4 * a * c) * a^2 * b^3 - 2 * (b^2 - 4 * a * c) * a^2 * b^3 - 2 * \sqrt{a^2 - a * b + b * c} \\
& - c^2 + \sqrt{b^2 - 4 * a * c}} * (a - b + c)) * \sqrt{b^2 - 4 * a * c}} * a * b^4 - 5 * \sqrt{a^2 \\
& 2 - a * b + b * c - c^2 + \sqrt{b^2 - 4 * a * c}} * (a - b + c)) * \sqrt{b^2 - 4 * a * c}} * b^5 \\
& + 2 * (b^2 - 4 * a * c) * b^5 - 9 * \sqrt{a^2 - a * b + b * c - c^2 + \sqrt{b^2 - 4 * a * c}} * (a \\
& - b + c)) * \sqrt{b^2 - 4 * a * c}} * a^3 * b * c + 6 * (b^2 - 4 * a * c) * a^3 * b * c + 9 * \sqrt{a^2 \\
& - a * b + b * c - c^2 + \sqrt{b^2 - 4 * a * c}} * (a - b + c)) * \sqrt{b^2 - 4 * a * c}} * a^2 * b \\
& ^2 * c + 6 * (b^2 - 4 * a * c) * a^2 * b^2 * c + 27 * \sqrt{a^2 - a * b + b * c - c^2 + \sqrt{b^2 \\
& - 4 * a * c}} * (a - b + c)) * \sqrt{b^2 - 4 * a * c}} * a * b^3 * c - 18 * (b^2 - 4 * a * c) * a * b^3 * c \\
& + \sqrt{a^2 - a * b + b * c - c^2 + \sqrt{b^2 - 4 * a * c}} * (a - b + c)) * \sqrt{b^2 - 4 \\
& * a * c}} * b^4 * c + 2 * (b^2 - 4 * a * c) * b^4 * c - 6 * \sqrt{a^2 - a * b + b * c - c^2 + \sqrt{b \\
& ^2 - 4 * a * c}} * (a - b + c)) * \sqrt{b^2 - 4 * a * c}} * a^3 * c^2 - 12 * (b^2 - 4 * a * c) * a^3 * c \\
& ^2 - 38 * \sqrt{a^2 - a * b + b * c - c^2 + \sqrt{b^2 - 4 * a * c}} * (a - b + c)) * \sqrt{b^2 \\
& 2 - 4 * a * c}} * a^2 * b * c^2 + 36 * (b^2 - 4 * a * c) * a^2 * b * c^2 + 6 * \sqrt{a^2 - a * b + b * c} \\
& - c^2 + \sqrt{b^2 - 4 * a * c}} * (a - b + c)) * \sqrt{b^2 - 4 * a * c}} * a * b^2 * c^2 - 8 * (b^2 \\
& - 4 * a * c) * a * b^2 * c^2 + \sqrt{a^2 - a * b + b * c - c^2 + \sqrt{b^2 - 4 * a * c}} * (a - b \\
& + c)) * \sqrt{b^2 - 4 * a * c}} * b^3 * c^2 - 2 * (b^2 - 4 * a * c) * b^3 * c^2 - 28 * \sqrt{a^2 - \\
& a * b + b * c - c^2 + \sqrt{b^2 - 4 * a * c}} * (a - b + c)) * \sqrt{b^2 - 4 * a * c}} * a^2 * c^3 \\
& - 8 * (b^2 - 4 * a * c) * a^2 * c^3 + 3 * \sqrt{a^2 - a * b + b * c - c^2 + \sqrt{b^2 - 4 * a * c}} \\
& ) * (a - b + c)) * \sqrt{b^2 - 4 * a * c}} * a * b * c^3 + 14 * (b^2 - 4 * a * c) * a * b * c^3 - 5 * \sqrt{ \\
& t(a^2 - a * b + b * c - c^2 + \sqrt{b^2 - 4 * a * c}} * (a - b + c)) * \sqrt{b^2 - 4 * a * c}} * \\
& b^2 * c^3 - 2 * (b^2 - 4 * a * c) * b^2 * c^3 + 10 * \sqrt{a^2 - a * b + b * c - c^2 + \sqrt{b^2 \\
& 2 - 4 * a * c}} * (a - b + c)) * \sqrt{b^2 - 4 * a * c}} * a * c^4 + 4 * (b^2 - 4 * a * c) * a * c^4) * ( \\
& \text{ifloor}(1/2 * x / \pi + 1/2) + \arctan(2 * \sqrt{1/2}) * \tan(1/2 * x) / \sqrt{((2 * a^3 - 2 * a^2 \\
& * c + \sqrt{-4 * (a^3 + a^2 * b + a^2 * c)} * (a^3 - a^2 * b + a^2 * c) + 4 * (a^3 - a^2 * c)^ \\
& 2)) / (a^3 - a^2 * b + a^2 * c))}) * \text{abs}(a - b + c) / (3 * a^7 * b^2 - 5 * a^6 * b^3 - 6 * a^5 * \\
& b^4 + 10 * a^4 * b^5 + 3 * a^3 * b^6 - 5 * a^2 * b^7 - 12 * a^8 * c + 20 * a^7 * b * c + 47 * a^6 * b \\
& ^2 * c - 60 * a^5 * b^3 * c - 46 * a^4 * b^4 * c + 40 * a^3 * b^5 * c + 11 * a^2 * b^6 * c - 92 * a^7 * c \\
& ^2 + 80 * a^6 * b * c^2 + 182 * a^5 * b^2 * c^2 - 94 * a^4 * b^3 * c^2 - 78 * a^3 * b^4 * c^2 - 6 * a \\
& ^2 * b^5 * c^2 - 184 * a^6 * c^3 + 56 * a^5 * b * c^3 + 166 * a^4 * b^2 * c^3 + 36 * a^3 * b^3 * c^3 \\
& - 6 * a^2 * b^4 * c^3 - 120 * a^5 * c^4 - 48 * a^4 * b * c^4 + 23 * a^3 * b^2 * c^4 + 11 * a^2 * b^3 * \\
& c^4 + 4 * a^4 * c^5 - 44 * a^3 * b * c^5 - 5 * a^2 * b^2 * c^5 + 20 * a^3 * c^6) - (2 * a^2 * b^5 - \\
& 2 * b^7 - 14 * a^3 * b^3 * c - 6 * a^2 * b^4 * c + 26 * a * b^5 * c - 2 * b^6 * c + 24 * a^4 * b * c^2 + \\
& 36 * a^3 * b^2 * c^2 - 108 * a^2 * b^3 * c^2 + 16 * a * b^4 * c^2 + 2 * b^5 * c^2 - 48 * a^4 * c^3 + \\
& 144 * a^3 * b * c^3 - 24 * a^2 * b^2 * c^3 - 22 * a * b^3 * c^3 + 2 * b^4 * c^3 - 32 * a^3 * c^4 + 5 \\
& 6 * a^2 * b * c^4 - 12 * a * b^2 * c^4 + 16 * a^2 * c^5 - 3 * \sqrt{a^2 - a * b + b * c - c^2 - \sqrt{ \\
& b^2 - 4 * a * c}} * (a - b + c)) * a^2 * b^4 + 2 * \sqrt{a^2 - a * b + b * c - c^2 - \sqrt{ \\
& b^2 - 4 * a * c}} * (a - b + c)) * a * b^5 + 5 * \sqrt{a^2 - a * b + b * c - c^2 - \sqrt{b^2 - \\
& 4 * a * c}} * (a - b + c)) * b^6 + 15 * \sqrt{a^2 - a * b + b * c - c^2 - \sqrt{b^2 - 4 * a * c}} \\
& ) * (a - b + c)) * a^3 * b^2 * c - 13 * \sqrt{a^2 - a * b + b * c - c^2 - \sqrt{b^2 - 4 * a * c}} \\
& ) * (a - b + c)) * a^2 * b^3 * c - 37 * \sqrt{a^2 - a * b + b * c - c^2 - \sqrt{b^2 - 4 * a * c}} \\
& ) * (a - b + c)) * a * b^4 * c - \sqrt{a^2 - a * b + b * c - c^2 - \sqrt{b^2 - 4 * a * c}} * (a
\end{aligned}$$

$$\begin{aligned}
& - b + c)) * b^5 * c - 12 * \sqrt{a^2 - a * b + b * c - c^2 - \sqrt{b^2 - 4 * a * c}} * (a - b \\
& + c)) * a^4 * c^2 + 20 * \sqrt{a^2 - a * b + b * c - c^2 - \sqrt{b^2 - 4 * a * c}} * (a - b + \\
& c)) * a^3 * b * c^2 + 82 * \sqrt{a^2 - a * b + b * c - c^2 - \sqrt{b^2 - 4 * a * c}} * (a - b + \\
& c)) * a^2 * b^2 * c^2 - 4 * \sqrt{a^2 - a * b + b * c - c^2 - \sqrt{b^2 - 4 * a * c}} * (a - b + \\
& c)) * a * b^3 * c^2 - \sqrt{a^2 - a * b + b * c - c^2 - \sqrt{b^2 - 4 * a * c}} * (a - b + c) \\
& ) * b^4 * c^2 - 56 * \sqrt{a^2 - a * b + b * c - c^2 - \sqrt{b^2 - 4 * a * c}} * (a - b + c)) * \\
& a^3 * c^3 + 32 * \sqrt{a^2 - a * b + b * c - c^2 - \sqrt{b^2 - 4 * a * c}} * (a - b + c)) * a^2 \\
& * b * c^3 - \sqrt{a^2 - a * b + b * c - c^2 - \sqrt{b^2 - 4 * a * c}} * (a - b + c)) * a * b^2 \\
& * c^3 + 5 * \sqrt{a^2 - a * b + b * c - c^2 - \sqrt{b^2 - 4 * a * c}} * (a - b + c)) * b^3 * c^3 \\
& + 20 * \sqrt{a^2 - a * b + b * c - c^2 - \sqrt{b^2 - 4 * a * c}} * (a - b + c)) * a^2 * c^4 \\
& - 20 * \sqrt{a^2 - a * b + b * c - c^2 - \sqrt{b^2 - 4 * a * c}} * (a - b + c)) * a * b * c^4 + \\
& 3 * \sqrt{a^2 - a * b + b * c - c^2 - \sqrt{b^2 - 4 * a * c}} * (a - b + c)) * \sqrt{b^2 - 4 * \\
& a * c} * a^2 * b^3 - 2 * (b^2 - 4 * a * c) * a^2 * b^3 - 2 * \sqrt{a^2 - a * b + b * c - c^2 - \sqrt{b^2 - 4 * a * c}} * (a - b + c)) * \sqrt{b^2 - 4 * a * c} * a * b^4 - 5 * \sqrt{a^2 - a * b + b * c - c^2 - \sqrt{b^2 - 4 * a * c}} * (a - b + c)) * \sqrt{b^2 - 4 * a * c} * b^5 + 2 * (b^2 - 4 * a * c) * b^5 - 9 * \sqrt{a^2 - a * b + b * c - c^2 - \sqrt{b^2 - 4 * a * c}} * (a - b + c)) * \sqrt{b^2 - 4 * a * c} * a^3 * b * c + 6 * (b^2 - 4 * a * c) * a^3 * b * c + 9 * \sqrt{a^2 - a * b + b * c - c^2 - \sqrt{b^2 - 4 * a * c}} * (a - b + c)) * \sqrt{b^2 - 4 * a * c} * a^2 * b^2 * c + 6 * (b^2 - 4 * a * c) * a^2 * b^2 * c + 27 * \sqrt{a^2 - a * b + b * c - c^2 - \sqrt{b^2 - 4 * a * c}} * (a - b + c)) * \sqrt{b^2 - 4 * a * c} * a * b^3 * c - 18 * (b^2 - 4 * a * c) * a * b^3 * c + \sqrt{a^2 - a * b + b * c - c^2 - \sqrt{b^2 - 4 * a * c}} * (a - b + c)) * \sqrt{b^2 - 4 * a * c} * b^4 * c + 2 * (b^2 - 4 * a * c) * b^4 * c - 6 * \sqrt{a^2 - a * b + b * c - c^2 - \sqrt{b^2 - 4 * a * c}} * (a - b + c)) * \sqrt{b^2 - 4 * a * c} * a^3 * c^2 - 12 * (b^2 - 4 * a * c) * a^3 * c^2 - 38 * \sqrt{a^2 - a * b + b * c - c^2 - \sqrt{b^2 - 4 * a * c}} * (a - b + c)) * \sqrt{b^2 - 4 * a * c} * a^2 * b * c^2 + 36 * (b^2 - 4 * a * c) * a^2 * b * c^2 + 6 * \sqrt{a^2 - a * b + b * c - c^2 - \sqrt{b^2 - 4 * a * c}} * (a - b + c)) * \sqrt{b^2 - 4 * a * c} * a * b^2 * c^2 - 8 * (b^2 - 4 * a * c) * a * b^2 * c^2 + \sqrt{a^2 - a * b + b * c - c^2 - \sqrt{b^2 - 4 * a * c}} * (a - b + c)) * \sqrt{b^2 - 4 * a * c} * b^3 * c^2 - 2 * (b^2 - 4 * a * c) * b^3 * c^2 - 28 * \sqrt{a^2 - a * b + b * c - c^2 - \sqrt{b^2 - 4 * a * c}} * (a - b + c)) * \sqrt{b^2 - 4 * a * c} * a^2 * c^3 - 8 * (b^2 - 4 * a * c) * a^2 * c^3 + 3 * \sqrt{a^2 - a * b + b * c - c^2 - \sqrt{b^2 - 4 * a * c}} * (a - b + c)) * \sqrt{b^2 - 4 * a * c} * a * b * c^3 + 14 * (b^2 - 4 * a * c) * a * b * c^3 - 5 * \sqrt{a^2 - a * b + b * c - c^2 - \sqrt{b^2 - 4 * a * c}} * (a - b + c)) * \sqrt{b^2 - 4 * a * c} * b^2 * c^3 - 2 * (b^2 - 4 * a * c) * b^2 * c^3 + 10 * \sqrt{a^2 - a * b + b * c - c^2 - \sqrt{b^2 - 4 * a * c}} * (a - b + c)) * \sqrt{b^2 - 4 * a * c} * a * c^4 + 4 * (b^2 - 4 * a * c) * a * c^4 * (\pi * \text{floor}(1/2 * x / \pi + 1/2) + \arctan(2 * \sqrt{1/2}) * \tan(1/2 * x) / \sqrt{((2 * a^3 - 2 * a^2 * c - \sqrt{-4 * (a^3 + a^2 * b + a^2 * c)} * (a^3 - a^2 * b + a^2 * c) + 4 * (a^3 - a^2 * c)^2)) / (a^3 - a^2 * b + a^2 * c))}) * \text{abs}(a - b + c) / (3 * a^7 * b^2 - 5 * a^6 * b^3 - 6 * a^5 * b^4 + 10 * a^4 * b^5 + 3 * a^3 * b^6 - 5 * a^2 * b^7 - 12 * a^8 * c + 20 * a^7 * b * c + 47 * a^6 * b^2 * c - 60 * a^5 * b^3 * c - 46 * a^4 * b^4 * c + 40 * a^3 * b^5 * c + 11 * a^2 * b^6 * c - 92 * a^7 * c^2 + 80 * a^6 * b * c^2 + 182 * a^5 * b^2 * c^2 - 94 * a^4 * b^3 * c^2 - 78 * a^3 * b^4 * c^2 - 6 * a^2 * b^5 * c^2 - 184 * a^6 * c^3 + 56 * a^5 * b * c^3 + 166 * a^4 * b^2 * c^3 + 36 * a^3 * b^3 * c^3 - 6 * a^2 * b^4 * c^3 - 120 * a^5 * c^4 - 48 * a^4 * b * c^4 + 23 * a^3 * b^2 * c^4 + 11 * a^2 * b^3 * c^4 + 4 * a^4 * c^5 - 44 * a^3 * b * c^5 - 5 * a^2 * b^2 * c^5 + 20 * a^3 * c^6) - b * \log(\text{abs}(\tan(1/2 * x) + 1)) / a^2 + b * \log(\text{abs}(\tan(1/2 * x) - 1)) / a^2 - 2 * \tan(1/2 * x) / ((\tan(1/2 * x))^2 - 1) * a)
\end{aligned}$$

**Mupad [B] (verification not implemented)**

Time = 14.79 (sec) , antiderivative size = 29417, normalized size of antiderivative = 106.97

$$\int \frac{\sec^2(x)}{a + b \cos(x) + c \cos^2(x)} dx = \text{Too large to display}$$

[In] int(1/(cos(x)^2\*(a + b\*cos(x) + c\*cos(x)^2)),x)

```
[Out] (b*atan(((b*((8192*tan(x/2)*(a*b^8 + 5*b^8*c - b^9 + a^2*c^7 + a^3*c^6 + b^4*c^5 - 5*b^5*c^4 + 10*b^6*c^3 - 10*b^7*c^2 - 2*a*b^2*c^6 + 14*a*b^3*c^5 - 35*a*b^4*c^4 + 40*a*b^5*c^3 - 20*a*b^6*c^2 - a^2*b*c^6 - 6*a^2*b^6*c + 10*a^2*b^2*c^5 - 20*a^2*b^3*c^4 + 5*a^2*b^4*c^3 + 11*a^2*b^5*c^2 + 10*a^3*b^2*c^4 - 18*a^3*b^3*c^3 + 9*a^3*b^4*c^2 - 2*a^4*b^2*c^3 + 2*a*b^7*c)))/a^4 + (b*((8192*(6*a^2*b^8 - 3*a*b^9 - 4*a^3*b^7 + a^4*b^6 + 3*a^4*c^6 + 2*a^5*c^5 - a^6*c^4 + 2*a*b^5*c^4 - 5*a*b^6*c^3 + a*b^7*c^2 + 16*a^2*b^7*c + 8*a^3*b*c^6 - 38*a^3*b^6*c + 10*a^4*b*c^5 + 23*a^4*b^5*c + 6*a^5*b*c^4 - 5*a^5*b^4*c - 10*a^2*b^3*c^5 + 25*a^2*b^4*c^4 + 4*a^2*b^5*c^3 - 41*a^2*b^6*c^2 - 20*a^3*b^2*c^5 - 36*a^3*b^3*c^4 + 91*a^3*b^4*c^3 - 3*a^3*b^5*c^2 - 24*a^4*b^2*c^4 - 55*a^4*b^3*c^3 + 57*a^4*b^4*c^2 - 3*a^5*b^2*c^3 - 28*a^5*b^3*c^2 + 4*a^6*b^2*c^2 + 5*a*b^8*c)))/a^4 + (b*((b*((8192*(3*a^5*b^7 - 7*a^6*b^6 + 5*a^7*b^5 - a^8*b^4 + 12*a^7*c^5 + 20*a^8*c^4 + 4*a^9*c^3 - 4*a^10*c^2 - 5*a^5*b^6*c + 8*a^6*b^5*c - 15*a^6*b^5*c + 28*a^7*b^4*c + 46*a^7*b^4*c + 64*a^8*b^3*c^3 - 31*a^8*b^3*c + 44*a^9*b^2*c - 2*a^5*b^3*c^4 + 5*a^5*b^4*c^3 - a^5*b^5*c^2 - 23*a^6*b^2*c^4 - 3*a^6*b^3*c^3 + 40*a^6*b^4*c^2 - 85*a^7*b^2*c^3 - 4*a^7*b^3*c^2 - 73*a^8*b^2*c^2)))/a^4 + (8192*b*tan(x/2)*(8*a^12*c + 2*a^6*b^7 - 6*a^7*b^6 + 8*a^8*b^5 - 8*a^9*b^4 + 6*a^10*b^3 - 2*a^11*b^2 + 24*a^8*c^5 + 16*a^9*c^4 - 32*a^10*c^3 - 16*a^11*c^2 - 2*a^6*b^6*c - 14*a^7*b^5*c - 8*a^8*b^4*c + 46*a^8*b^4*c + 88*a^9*b^3*c - 50*a^9*b^3*c + 72*a^10*b^2*c + 36*a^10*b^2*c + 2*a^6*b^4*c^3 - 2*a^6*b^5*c^2 - 14*a^7*b^2*c^4 + 10*a^7*b^3*c^3 + 24*a^7*b^4*c^2 - 68*a^8*b^2*c^3 + 2*a^8*b^3*c^2 - 80*a^9*b^2*c^2 - 24*a^11*b*c)))/a^6))/a^2 + (8192*tan(x/2)*(6*a^3*b^8 - 2*a^2*b^9 - 8*a^4*b^7 + 8*a^5*b^6 - 6*a^6*b^5 + 2*a^7*b^4 + 10*a^5*c^6 + 6*a^6*c^5 - 2*a^7*c^4 + 2*a^8*c^3 + 2*a^2*b^8*c + 14*a^3*b^7*c - 50*a^4*b^6*c - 22*a^5*b^5*c + 56*a^5*b^5*c + 12*a^6*b^4*c - 38*a^6*b^4*c + 18*a^7*b^3*c + 24*a^7*b^3*c - 8*a^8*b^2*c - 2*a^2*b^6*c^3 + 2*a^2*b^7*c^2 + 14*a^3*b^4*c^4 - 10*a^3*b^5*c^3 - 24*a^3*b^6*c^2 - 27*a^4*b^2*c^5 + 15*a^4*b^3*c^4 + 59*a^4*b^4*c^3 + 7*a^4*b^5*c^2 + 11*a^5*b^2*c^4 - 122*a^5*b^3*c^3 + 93*a^5*b^4*c^2 + 37*a^6*b^2*c^3 - 99*a^6*b^3*c^2 + 23*a^7*b^2*c^2))/a^4))/a^2))/a^2)*i)/a^2 + (b*((8192*tan(x/2)*(a*b^8 + 5*b^8*c - b^9 + a^2*c^7 + a^3*c^6 + b^4*c^5 - 5*b^5*c^4 + 10*b^6*c^3 - 10*b^7*c^2 - 2*a*b^2*c^6 + 14*a*b^3*c^5 - 35*a*b^4*c^4 + 40*a*b^5*c^3 - 20*a*b^6*c^2 - a^2*b*c^6 - 6*a^2*b^6*c + 10*a^2*b^2*c^5 - 20*a^2*b^3*c^4 + 5*a^2*b^4*c^3 + 11*a^2*b^5*c^2 + 10*a^3*b^2*c^4 - 18*a^3*b^3*c^3 + 9*a^3*b^4*c^2 - 2*a^4*b^2*c^3 + 2*a*b^7*c)))/a^4 - (b*((8192*(6*a^2*b^8 - 3*a*b^9 - 4*a^3*b^7 + a^4*b^6 + 3*a^4*c^6 + 2*a^5*c^5 - a^6*c^4
```



$$\begin{aligned}
& 4 + 2*a*b^5*c^4 - 5*a*b^6*c^3 + a*b^7*c^2 + 16*a^2*b^7*c + 8*a^3*b*c^6 - 38 \\
& *a^3*b^6*c + 10*a^4*b*c^5 + 23*a^4*b^5*c + 6*a^5*b*c^4 - 5*a^5*b^4*c - 10*a \\
& ^2*b^3*c^5 + 25*a^2*b^4*c^4 + 4*a^2*b^5*c^3 - 41*a^2*b^6*c^2 - 20*a^3*b^2*c \\
& ^5 - 36*a^3*b^3*c^4 + 91*a^3*b^4*c^3 - 3*a^3*b^5*c^2 - 24*a^4*b^2*c^4 - 55* \\
& a^4*b^3*c^3 + 57*a^4*b^4*c^2 - 3*a^5*b^2*c^3 - 28*a^5*b^3*c^2 + 4*a^6*b^2*c \\
& ^2 + 5*a*b^8*c)) / a^4 + (b*((b*((8192*(3*a^5*b^7 - 7*a^6*b^6 + 5*a^7*b^5 - a \\
& ^8*b^4 + 12*a^7*c^5 + 20*a^8*c^4 + 4*a^9*c^3 - 4*a^10*c^2 - 5*a^5*b^6*c + 8 \\
& *a^6*b*c^5 - 15*a^6*b^5*c + 28*a^7*b*c^4 + 46*a^7*b^4*c + 64*a^8*b*c^3 - 31 \\
& *a^8*b^3*c + 44*a^9*b*c^2 + 5*a^9*b^2*c - 2*a^5*b^3*c^4 + 5*a^5*b^4*c^3 - a \\
& ^5*b^5*c^2 - 23*a^6*b^2*c^4 - 3*a^6*b^3*c^3 + 40*a^6*b^4*c^2 - 85*a^7*b^2*c \\
& ^3 - 4*a^7*b^3*c^2 - 73*a^8*b^2*c^2)) / a^4 - (8192*b*tan(x/2)*(8*a^12*c + 2* \\
& a^6*b^7 - 6*a^7*b^6 + 8*a^8*b^5 - 8*a^9*b^4 + 6*a^10*b^3 - 2*a^11*b^2 + 24* \\
& a^8*c^5 + 16*a^9*c^4 - 32*a^10*c^3 - 16*a^11*c^2 - 2*a^6*b^6*c - 14*a^7*b^5 \\
& *c - 8*a^8*b*c^4 + 46*a^8*b^4*c + 88*a^9*b*c^3 - 50*a^9*b^3*c + 72*a^10*b*c \\
& ^2 + 36*a^10*b^2*c + 2*a^6*b^4*c^3 - 2*a^6*b^5*c^2 - 14*a^7*b^2*c^4 + 10*a^ \\
& 7*b^3*c^3 + 24*a^7*b^4*c^2 - 68*a^8*b^2*c^3 + 2*a^8*b^3*c^2 - 80*a^9*b^2*c^ \\
& 2 - 24*a^11*b*c)) / a^6)) / a^2 - (8192*tan(x/2)*(6*a^3*b^8 - 2*a^2*b^9 - 8*a^4 \\
& *b^7 + 8*a^5*b^6 - 6*a^6*b^5 + 2*a^7*b^4 + 10*a^5*c^6 + 6*a^6*c^5 - 2*a^7*c \\
& ^4 + 2*a^8*c^3 + 2*a^2*b^8*c + 14*a^3*b^7*c - 50*a^4*b^6*c - 22*a^5*b*c^5 + \\
& 56*a^5*b^5*c + 12*a^6*b*c^4 - 38*a^6*b^4*c + 18*a^7*b*c^3 + 24*a^7*b^3*c - \\
& 8*a^8*b^2*c - 2*a^2*b^6*c^3 + 2*a^2*b^7*c^2 + 14*a^3*b^4*c^4 - 10*a^3*b^5* \\
& c^3 - 24*a^3*b^6*c^2 - 27*a^4*b^2*c^5 + 15*a^4*b^3*c^4 + 59*a^4*b^4*c^3 + 7 \\
& *a^4*b^5*c^2 + 11*a^5*b^2*c^4 - 122*a^5*b^3*c^3 + 93*a^5*b^4*c^2 + 37*a^6*b \\
& ^2*c^3 - 99*a^6*b^3*c^2 + 23*a^7*b^2*c^2)) / a^4)) / a^2)) / a^2)) * i) / a^2) / ((1638 \\
& 4*(b*c^7 - 4*b^2*c^6 + 6*b^3*c^5 - 4*b^4*c^4 + b^5*c^3 - 2*a*b^2*c^5 + 2*a* \\
& b^3*c^4 - a*b^4*c^3 + a^2*b^2*c^4 + a*b*c^6)) / a^4 + (b*((8192*tan(x/2)*(a*b \\
& ^8 + 5*b^8*c - b^9 + a^2*c^7 + a^3*c^6 + b^4*c^5 - 5*b^5*c^4 + 10*b^6*c^3 - \\
& 10*b^7*c^2 - 2*a*b^2*c^6 + 14*a*b^3*c^5 - 35*a*b^4*c^4 + 40*a*b^5*c^3 - 20 \\
& *a*b^6*c^2 - a^2*b*c^6 - 6*a^2*b^6*c + 10*a^2*b^2*c^5 - 20*a^2*b^3*c^4 + 5* \\
& a^2*b^4*c^3 + 11*a^2*b^5*c^2 + 10*a^3*b^2*c^4 - 18*a^3*b^3*c^3 + 9*a^3*b^4* \\
& c^2 - 2*a^4*b^2*c^3 + 2*a*b^7*c)) / a^4 + (b*((8192*(6*a^2*b^8 - 3*a*b^9 - 4* \\
& a^3*b^7 + a^4*b^6 + 3*a^4*c^6 + 2*a^5*c^5 - a^6*c^4 + 2*a*b^5*c^4 - 5*a*b^6 \\
& *c^3 + a*b^7*c^2 + 16*a^2*b^7*c + 8*a^3*b*c^6 - 38*a^3*b^6*c + 10*a^4*b*c^5 \\
& + 23*a^4*b^5*c + 6*a^5*b*c^4 - 5*a^5*b^4*c - 10*a^2*b^3*c^5 + 25*a^2*b^4*c \\
& ^4 + 4*a^2*b^5*c^3 - 41*a^2*b^6*c^2 - 20*a^3*b^2*c^5 - 36*a^3*b^3*c^4 + 91* \\
& a^3*b^4*c^3 - 3*a^3*b^5*c^2 - 24*a^4*b^2*c^4 - 55*a^4*b^3*c^3 + 57*a^4*b^4* \\
& c^2 - 3*a^5*b^2*c^3 - 28*a^5*b^3*c^2 + 4*a^6*b^2*c^2 + 5*a*b^8*c)) / a^4 + (b \\
& *((b*((8192*(3*a^5*b^7 - 7*a^6*b^6 + 5*a^7*b^5 - a^8*b^4 + 12*a^7*c^5 + 20* \\
& a^8*c^4 + 4*a^9*c^3 - 4*a^10*c^2 - 5*a^5*b^6*c + 8*a^6*b*c^5 - 15*a^6*b^5*c \\
& + 28*a^7*b*c^4 + 46*a^7*b^4*c + 64*a^8*b*c^3 - 31*a^8*b^3*c + 44*a^9*b*c^2 \\
& + 5*a^9*b^2*c - 2*a^5*b^3*c^4 + 5*a^5*b^4*c^3 - a^5*b^5*c^2 - 23*a^6*b^2*c \\
& ^4 - 3*a^6*b^3*c^3 + 40*a^6*b^4*c^2 - 85*a^7*b^2*c^3 - 4*a^7*b^3*c^2 - 73*a \\
& ^8*b^2*c^2)) / a^4 + (8192*b*tan(x/2)*(8*a^12*c + 2*a^6*b^7 - 6*a^7*b^6 + 8*a \\
& ^8*b^5 - 8*a^9*b^4 + 6*a^10*b^3 - 2*a^11*b^2 + 24*a^8*c^5 + 16*a^9*c^4 - 32 \\
& *a^10*c^3 - 16*a^11*c^2 - 2*a^6*b^6*c - 14*a^7*b^5*c - 8*a^8*b*c^4 + 46*a^8
\end{aligned}$$

$$\begin{aligned}
& *b^4*c + 88*a^9*b*c^3 - 50*a^9*b^3*c + 72*a^10*b*c^2 + 36*a^10*b^2*c + 2*a^6*b^4*c^3 - 2*a^6*b^5*c^2 - 14*a^7*b^2*c^4 + 10*a^7*b^3*c^3 + 24*a^7*b^4*c^2 - 68*a^8*b^2*c^3 + 2*a^8*b^3*c^2 - 80*a^9*b^2*c^2 - 24*a^11*b*c)) / a^6)) / a^2 + (8192*\tan(x/2)*(6*a^3*b^8 - 2*a^2*b^9 - 8*a^4*b^7 + 8*a^5*b^6 - 6*a^6*b^5 + 2*a^7*b^4 + 10*a^5*c^6 + 6*a^6*c^5 - 2*a^7*c^4 + 2*a^8*c^3 + 2*a^2*b^8*c + 14*a^3*b^7*c - 50*a^4*b^6*c - 22*a^5*b*c^5 + 56*a^5*b^5*c + 12*a^6*b*c^4 - 38*a^6*b^4*c + 18*a^7*b*c^3 + 24*a^7*b^3*c - 8*a^8*b^2*c - 2*a^2*b^6*c^3 + 2*a^2*b^7*c^2 + 14*a^3*b^4*c^4 - 10*a^3*b^5*c^3 - 24*a^3*b^6*c^2 - 27*a^4*b^2*c^5 + 15*a^4*b^3*c^4 + 59*a^4*b^4*c^3 + 7*a^4*b^5*c^2 + 11*a^5*b^2*c^4 - 122*a^5*b^3*c^3 + 93*a^5*b^4*c^2 + 37*a^6*b^2*c^3 - 99*a^6*b^3*c^2 + 23*a^7*b^2*c^2)) / a^4)) / a^2)) / a^2 - (b*((8192*\tan(x/2)*(a*b^8 + 5*b^8*c - b^9 + a^2*c^7 + a^3*c^6 + b^4*c^5 - 5*b^5*c^4 + 10*b^6*c^3 - 10*b^7*c^2 - 2*a*b^2*c^6 + 14*a*b^3*c^5 - 35*a*b^4*c^4 + 40*a*b^5*c^3 - 20*a*b^6*c^2 - a^2*b*c^6 - 6*a^2*b^6*c + 10*a^2*b^2*c^5 - 20*a^2*b^3*c^4 + 5*a^2*b^4*c^3 + 11*a^2*b^5*c^2 + 10*a^3*b^2*c^4 - 18*a^3*b^3*c^3 + 9*a^3*b^4*c^2 - 2*a^4*b^2*c^3 + 2*a*b^7*c)) / a^4 - (b*((8192*(6*a^2*b^8 - 3*a*b^9 - 4*a^3*b^7 + a^4*b^6 + 3*a^4*c^6 + 2*a^5*c^5 - a^6*c^4 + 2*a*b^5*c^4 - 5*a*b^6*c^3 + a*b^7*c^2 + 16*a^2*b^7*c + 8*a^3*b*c^6 - 38*a^3*b^6*c + 10*a^4*b*c^5 + 23*a^4*b^5*c + 6*a^5*b*c^4 - 5*a^5*b^4*c - 10*a^2*b^3*c^5 + 25*a^2*b^4*c^4 + 4*a^2*b^5*c^3 - 41*a^2*b^6*c^2 - 20*a^3*b^2*c^5 - 36*a^3*b^3*c^4 + 91*a^3*b^4*c^3 - 3*a^3*b^5*c^2 - 24*a^4*b^2*c^4 - 55*a^4*b^3*c^3 + 57*a^4*b^4*c^2 - 3*a^5*b^2*c^3 - 28*a^5*b^3*c^2 + 4*a^6*b^2*c^2 + 5*a*b^8*c)) / a^4 + (b*((8192*(3*a^5*b^7 - 7*a^6*b^6 + 5*a^7*b^5 - a^8*b^4 + 12*a^7*c^5 + 20*a^8*c^4 + 4*a^9*c^3 - 4*a^10*c^2 - 5*a^5*b^6*c + 8*a^6*b*c^5 - 15*a^6*b^5*c + 28*a^7*b*c^4 + 46*a^7*b^4*c + 64*a^8*b*c^3 - 31*a^8*b^3*c + 44*a^9*b*c^2 + 5*a^9*b^2*c - 2*a^5*b^3*c^4 + 5*a^5*b^4*c^3 - a^5*b^5*c^2 - 23*a^6*b^2*c^4 - 3*a^6*b^3*c^3 + 40*a^6*b^4*c^2 - 85*a^7*b^2*c^3 - 4*a^7*b^3*c^2 - 73*a^8*b^2*c^2)) / a^4 - (8192*b*\tan(x/2)*(8*a^12*c + 2*a^6*b^7 - 6*a^7*b^6 + 8*a^8*b^5 - 8*a^9*b^4 + 6*a^10*b^3 - 2*a^11*b^2 + 24*a^8*c^5 + 16*a^9*c^4 - 32*a^10*c^3 - 16*a^11*c^2 - 2*a^6*b^6*c - 14*a^7*b^5*c - 8*a^8*b*c^4 + 46*a^8*b^4*c + 88*a^9*b*c^3 - 50*a^9*b^3*c + 72*a^10*b*c^2 + 36*a^10*b^2*c + 2*a^6*b^4*c^3 - 2*a^6*b^5*c^2 - 14*a^7*b^2*c^4 + 10*a^7*b^3*c^3 + 24*a^7*b^4*c^2 - 68*a^8*b^2*c^3 + 2*a^8*b^3*c^2 - 80*a^9*b^2*c^2 - 24*a^11*b*c)) / a^6)) / a^2 - (8192*\tan(x/2)*(6*a^3*b^8 - 2*a^2*b^9 - 8*a^4*b^7 + 8*a^5*b^6 - 6*a^6*b^5 + 2*a^7*b^4 + 10*a^5*c^6 + 6*a^6*c^5 - 2*a^7*c^4 + 2*a^8*c^3 + 2*a^2*b^8*c + 14*a^3*b^7*c - 50*a^4*b^6*c - 22*a^5*b*c^5 + 56*a^5*b^5*c + 12*a^6*b*c^4 - 38*a^6*b^4*c + 18*a^7*b*c^3 + 24*a^7*b^3*c - 8*a^8*b^2*c - 2*a^2*b^6*c^3 + 2*a^2*b^7*c^2 + 14*a^3*b^4*c^4 - 10*a^3*b^5*c^3 - 24*a^3*b^6*c^2 - 27*a^4*b^2*c^5 + 15*a^4*b^3*c^4 + 59*a^4*b^4*c^3 + 7*a^4*b^5*c^2 + 11*a^5*b^2*c^4 - 122*a^5*b^3*c^3 + 93*a^5*b^4*c^2 + 37*a^6*b^2*c^3 - 99*a^6*b^3*c^2 + 23*a^7*b^2*c^2)) / a^4)) / a^2)) / a^2)) * 2i) / a^2 - \operatorname{atan}(((((((8192*(3*a^5*b^7 - 7*a^6*b^6 + 5*a^7*b^5 - a^8*b^4 + 12*a^7*c^5 + 20*a^8*c^4 + 4*a^9*c^3 - 4*a^10*c^2 - 5*a^5*b^6*c + 8*a^6*b*c^5 - 15*a^6*b^5*c + 28*a^7*b*c^4 + 46*a^7*b^4*c + 64*a^8*b*c^3 - 31*a^8*b^3*c + 44*a^9*b*c^2 + 5*a^9*b^2*c - 2*a^5*b^3*c^4 + 5*a^5*b^4*c^3 - a^5*b^5*c^2 - 23*a^6*b^2*c^4 - 3*a^6*b^3*c^3 + 40*a^6*b^4*c^2 - 85*a^7*b^2*c^3 - 4*a^7*b^3*c^2 - 73*a^8*b^2*c^2)))))))))) / a^2
\end{aligned}$$

$$\begin{aligned}
& ^4c^2 - 85a^7b^2c^3 - 4a^7b^3c^2 - 73a^8b^2c^2)/a^4 - (8192\tan(x/2)*(-b^8 + 8a^3c^5 + 8a^4c^4 - b^5*(-(4ac - b^2)^3)^{1/2} - b^6c^2 + 8ab^4c^3 - 18a^2b^2c^4 + 33a^2b^4c^2 - 38a^3b^2c^3 + b^3c^2*(-(4ac - b^2)^3)^{1/2} - 10ab^6c - 3a^2b^2c^2*(-(4ac - b^2)^3)^{1/2} - 2ab^3c^3*(-(4ac - b^2)^3)^{1/2} + 4ab^3c*(-(4ac - b^2)^3)^{1/2}))/((2*(a^6b^4 - a^4b^6 + 16a^6c^4 + 32a^7c^3 + 16a^8c^2 + 10a^5b^4c - 8a^7b^2c + a^4b^4c^2 - 8a^5b^2c^3 - 32a^6b^2c^2)))^{1/2} * (8a^{12}c + 2a^6b^7 - 6a^7b^6 + 8a^8b^5 - 8a^9b^4 + 6a^{10}b^3 - 2a^{11}b^2 + 24a^8c^5 + 16a^9c^4 - 32a^{10}c^3 - 16a^{11}c^2 - 2a^6b^6c - 14a^7b^5c - 8a^8b^4c + 46a^8b^4c + 88a^9b^3c - 50a^9b^3c + 72a^{10}b^2c + 36a^{10}b^2c + 2a^6b^4c^3 - 2a^6b^5c^2 - 14a^7b^2c^4 + 10a^7b^3c^3 + 24a^7b^4c^2 - 68a^8b^2c^3 + 2a^8b^3c^2 - 80a^9b^2c^2 - 24a^{11}b^2c))/a^4)*(-b^8 + 8a^3c^5 + 8a^4c^4 - b^5*(-(4ac - b^2)^3)^{1/2} - b^6c^2 + 8ab^4c^3 - 18a^2b^2c^4 + 33a^2b^4c^2 - 38a^3b^2c^3 + b^3c^2*(-(4ac - b^2)^3)^{1/2} - 10ab^6c - 3a^2b^2c^2*(-(4ac - b^2)^3)^{1/2} - 2ab^3c^3*(-(4ac - b^2)^3)^{1/2} + 4ab^3c*(-(4ac - b^2)^3)^{1/2}))/((2*(a^6b^4 - a^4b^6 + 16a^6c^4 + 32a^7c^3 + 16a^8c^2 + 10a^5b^4c - 8a^7b^2c + a^4b^4c^2 - 8a^5b^2c^3 - 32a^6b^2c^2)))^{1/2} - (8192\tan(x/2)*(6a^3b^8 - 2a^2b^9 - 8a^4b^7 + 8a^5b^6 - 6a^6b^5 + 2a^7b^4 + 10a^5c^6 + 6a^6c^5 - 2a^7c^4 + 2a^8c^3 + 2a^2b^8c + 14a^3b^7c - 50a^4b^6c - 22a^5b^5c^5 + 56a^5b^5c + 12a^6b^4c - 38a^6b^4c + 18a^7b^3c^3 + 24a^7b^3c - 8a^8b^2c - 2a^2b^6c^3 + 2a^2b^7c^2 + 14a^3b^4c^4 - 10a^3b^5c^3 - 24a^3b^6c^2 - 27a^4b^2c^5 + 15a^4b^3c^4 + 59a^4b^4c^3 + 7a^4b^5c^2 + 11a^5b^2c^4 - 122a^5b^3c^3 + 93a^5b^4c^2 + 37a^6b^2c^3 - 99a^6b^3c^2 + 23a^7b^2c^2))/a^4)*(-b^8 + 8a^3c^5 + 8a^4c^4 - b^5*(-(4ac - b^2)^3)^{1/2} - b^6c^2 + 8ab^4c^3 - 18a^2b^2c^4 + 33a^2b^4c^2 - 38a^3b^2c^3 + b^3c^2*(-(4ac - b^2)^3)^{1/2} - 10ab^6c - 3a^2b^2c^2*(-(4ac - b^2)^3)^{1/2} - 2ab^3c^3*(-(4ac - b^2)^3)^{1/2} + 4ab^3c*(-(4ac - b^2)^3)^{1/2}))/((2*(a^6b^4 - a^4b^6 + 16a^6c^4 + 32a^7c^3 + 16a^8c^2 + 10a^5b^4c - 8a^7b^2c + a^4b^4c^2 - 8a^5b^2c^3 - 32a^6b^2c^2)))^{1/2} + (8192*(6a^2b^8 - 3ab^9 - 4a^3b^7 + a^4b^6 + 3a^4c^6 + 2a^5c^5 - a^6c^4 + 2ab^5c^4 - 5ab^6c^3 + ab^7c^2 + 16a^2b^7c + 8a^3b^6c - 38a^3b^6c + 10a^4b^5c + 23a^4b^5c + 6a^5b^4c - 5a^5b^4c - 10a^2b^3c^5 + 25a^2b^4c^4 + 4a^2b^5c^3 - 41a^2b^6c^2 - 20a^3b^2c^5 - 36a^3b^3c^4 + 91a^3b^4c^3 - 3a^3b^5c^2 - 24a^4b^2c^4 - 55a^4b^3c^3 + 57a^4b^4c^2 - 3a^5b^2c^3 - 28a^5b^3c^2 + 4a^6b^2c^2 + 5ab^8c))/a^4)*(-b^8 + 8a^3c^5 + 8a^4c^4 - b^5*(-(4ac - b^2)^3)^{1/2} - b^6c^2 + 8ab^4c^3 - 18a^2b^2c^4 + 33a^2b^4c^2 - 38a^3b^2c^3 + b^3c^2*(-(4ac - b^2)^3)^{1/2} - 10ab^6c - 3a^2b^2c^2*(-(4ac - b^2)^3)^{1/2} - 2ab^3c^3*(-(4ac - b^2)^3)^{1/2} + 4ab^3c*(-(4ac - b^2)^3)^{1/2}))/((2*(a^6b^4 - a^4b^6 + 16a^6c^4 + 32a^7c^3 + 16a^8c^2 + 10a^5b^4c - 8a^7b^2c + a^4b^4c^2 - 8a^5b^2c^3 - 32a^6b^2c^2)))^{1/2} - (8192\tan(x/2)*(ab^8 + 5b^8c - b^9 + a^2c^7 + a^3c^6 + b^4c^5 - 5b^5c
\end{aligned}$$

$$\begin{aligned}
& c^4 + 10b^6c^3 - 10b^7c^2 - 2a^2b^2c^6 + 14a^3b^3c^5 - 35a^4b^4c^4 + \\
& 40a^5b^5c^3 - 20a^6b^6c^2 - a^2b^2c^6 - 6a^2b^6c + 10a^2b^2c^5 - 2 \\
& 0a^2b^3c^4 + 5a^2b^4c^3 + 11a^2b^5c^2 + 10a^3b^2c^4 - 18a^3b^3c^3 + 9a^3b^4c^2 - 2a^4b^2c^3 + 2a^4b^7c) / a^4 * (- (b^8 + 8a^3c^5 \\
& + 8a^4c^4 - b^5 * (- (4ac - b^2)^3)^{1/2} - b^6c^2 + 8a^4b^4c^3 - 18a^2b^2c^4 + 33a^2b^4c^2 - 38a^3b^2c^3 + b^3c^2 * (- (4ac - b^2)^3)^{1/2} \\
& - 10a^2b^6c - 3a^2b^2c^2 * (- (4ac - b^2)^3)^{1/2} - 2a^2b^3c^3 * (- (4ac - b^2)^3)^{1/2} + 4a^2b^3c * (- (4ac - b^2)^3)^{1/2} ) / (2 * (a^6b^4 - a^4b^6 \\
& + 16a^6c^4 + 32a^7c^3 + 16a^8c^2 + 10a^5b^4c - 8a^7b^2c + a^4b^4c^2 - 8a^5b^2c^3 - 32a^6b^2c^2))^{1/2} * i - ( ( ( ( (8192 * (3a^5b^7 \\
& - 7a^6b^6 + 5a^7b^5 - a^8b^4 + 12a^7c^5 + 20a^8c^4 + 4a^9c^3 - 4a^10c^2 - 5a^5b^6c + 8a^6b^5c^5 - 15a^6b^5c + 28a^7b^4c^4 + 46 \\
& a^7b^4c^3 + 64a^8b^3c^3 - 31a^8b^3c + 44a^9b^2c^2 + 5a^9b^2c - 2a^5b^3c^4 + 5a^5b^4c^3 - a^5b^5c^2 - 23a^6b^2c^4 - 3a^6b^3c^3 + \\
& 40a^6b^4c^2 - 85a^7b^2c^3 - 4a^7b^3c^2 - 73a^8b^2c^2) ) / a^4 + (8192 * \tan(x/2) * (- (b^8 + 8a^3c^5 + 8a^4c^4 - b^5 * (- (4ac - b^2)^3)^{1/2} \\
& - b^6c^2 + 8a^4b^4c^3 - 18a^2b^2c^4 + 33a^2b^4c^2 - 38a^3b^2c^3 + b^3c^2 * (- (4ac - b^2)^3)^{1/2} - 10a^2b^6c - 3a^2b^2c^2 * (- (4ac - b^2)^3)^{1/2} \\
& - 2a^2b^3c^3 * (- (4ac - b^2)^3)^{1/2} + 4a^2b^3c * (- (4ac - b^2)^3)^{1/2} ) / (2 * (a^6b^4 - a^4b^6 + 16a^6c^4 + 32a^7c^3 + 16a^8c^2 + \\
& 10a^5b^4c - 8a^7b^2c + a^4b^4c^2 - 8a^5b^2c^3 - 32a^6b^2c^2))^{1/2} * (8a^12c + 2a^6b^7 - 6a^7b^6 + 8a^8b^5 - 8a^9b^4 + 6a^10 \\
& b^3 - 2a^11b^2 + 24a^8c^5 + 16a^9c^4 - 32a^10c^3 - 16a^11c^2 - 2 \\
& a^6b^6c - 14a^7b^5c - 8a^8b^4c + 46a^8b^4c + 88a^9b^3c^3 - 50a^9b^3c + 72a^10b^2c^2 + 36a^10b^2c + 2a^6b^4c^3 - 2a^6b^5c^2 - \\
& 14a^7b^2c^4 + 10a^7b^3c^3 + 24a^7b^4c^2 - 68a^8b^2c^3 + 2a^8b^3c^2 - 80a^9b^2c^2 - 24a^11b^2c) ) / a^4 * (- (b^8 + 8a^3c^5 + 8a^4c^4 \\
& - b^5 * (- (4ac - b^2)^3)^{1/2} - b^6c^2 + 8a^4b^4c^3 - 18a^2b^2c^4 + 33a^2b^4c^2 - 38a^3b^2c^3 + b^3c^2 * (- (4ac - b^2)^3)^{1/2} - 10a^2b^6c \\
& - 3a^2b^2c^2 * (- (4ac - b^2)^3)^{1/2} - 2a^2b^3c^3 * (- (4ac - b^2)^3)^{1/2} + 4a^2b^3c * (- (4ac - b^2)^3)^{1/2} ) / (2 * (a^6b^4 - a^4b^6 + 16a^6 \\
& c^4 + 32a^7c^3 + 16a^8c^2 + 10a^5b^4c - 8a^7b^2c + a^4b^4c^2 - 8a^5b^2c^3 - 32a^6b^2c^2))^{1/2} + (8192 * \tan(x/2) * (6a^3b^8 - 2a^2b^9 \\
& - 8a^4b^7 + 8a^5b^6 - 6a^6b^5 + 2a^7b^4 + 10a^5c^6 + 6a^6c^5 - 2a^7c^4 + 2a^8c^3 + 2a^2b^8c + 14a^3b^7c - 50a^4b^6c - 2 \\
& 2a^5b^5c^5 + 56a^5b^5c + 12a^6b^4c^4 - 38a^6b^4c + 18a^7b^3c^3 + 2 \\
& 4a^7b^3c - 8a^8b^2c - 2a^2b^6c^3 + 2a^2b^7c^2 + 14a^3b^4c^4 \\
& - 10a^3b^5c^3 - 24a^3b^6c^2 - 27a^4b^2c^5 + 15a^4b^3c^4 + 59a^4b^4c^3 + 7a^4b^5c^2 + 11a^5b^2c^4 - 122a^5b^3c^3 + 93a^5b^4c^2 + 37a^6b^2c^3 - 99a^6b^3c^2 + 23a^7b^2c^2) ) / a^4 * (- (b^8 + 8a^3 \\
& c^5 + 8a^4c^4 - b^5 * (- (4ac - b^2)^3)^{1/2} - b^6c^2 + 8a^4b^4c^3 - 18a^2b^2c^4 + 33a^2b^4c^2 - 38a^3b^2c^3 + b^3c^2 * (- (4ac - b^2)^3)^{1/2} \\
& - 10a^2b^6c - 3a^2b^2c^2 * (- (4ac - b^2)^3)^{1/2} - 2a^2b^3c^3 * (- (4ac - b^2)^3)^{1/2} + 4a^2b^3c * (- (4ac - b^2)^3)^{1/2} ) / (2 * (a^6b^4 - a^4b^6 \\
& + 16a^6c^4 + 32a^7c^3 + 16a^8c^2 + 10a^5b^4c - 8a^7b^2c
\end{aligned}$$

$$\begin{aligned}
& + a^4 b^4 c^2 - 8 a^5 b^2 c^3 - 32 a^6 b^2 c^2))^{(1/2)} + (8192(6 a^2 b^8 \\
& - 3 a b^9 - 4 a^3 b^7 + a^4 b^6 + 3 a^4 c^6 + 2 a^5 c^5 - a^6 c^4 + 2 a b^5 \\
& * c^4 - 5 a b^6 c^3 + a b^7 c^2 + 16 a^2 b^7 c + 8 a^3 b c^6 - 38 a^3 b^6 c \\
& + 10 a^4 b c^5 + 23 a^4 b^5 c + 6 a^5 b c^4 - 5 a^5 b^4 c - 10 a^2 b^3 c^5 \\
& + 25 a^2 b^4 c^4 + 4 a^2 b^5 c^3 - 41 a^2 b^6 c^2 - 20 a^3 b^2 c^5 - 36 a^3 \\
& * b^3 c^4 + 91 a^3 b^4 c^3 - 3 a^3 b^5 c^2 - 24 a^4 b^2 c^4 - 55 a^4 b^3 c^3 \\
& + 57 a^4 b^4 c^2 - 3 a^5 b^2 c^3 - 28 a^5 b^3 c^2 + 4 a^6 b^2 c^2 + 5 a b^8 \\
& * c)) / a^4 * (- (b^8 + 8 a^3 c^5 + 8 a^4 c^4 - b^5 * (- (4 a c - b^2)^3)^{(1/2)} - \\
& b^6 c^2 + 8 a b^4 c^3 - 18 a^2 b^2 c^4 + 33 a^2 b^4 c^2 - 38 a^3 b^2 c^3 + \\
& b^3 c^2 * (- (4 a c - b^2)^3)^{(1/2)} - 10 a b^6 c - 3 a^2 b c^2 * (- (4 a c - b^2)^3)^{(1/2)} - \\
& 2 a b c^3 * (- (4 a c - b^2)^3)^{(1/2)} + 4 a b^3 c * (- (4 a c - b^2)^3)^{(1/2)}) / (2 * (a^6 b^4 - a^4 b^6 + 16 a^6 c^4 + 32 a^7 c^3 + 16 a^8 c^2 + 10 \\
& * a^5 b^4 c - 8 a^7 b^2 c + a^4 b^4 c^2 - 8 a^5 b^2 c^3 - 32 a^6 b^2 c^2))^{(1/2)} + (8192 * \tan(x/2) * (a b^8 + 5 b^8 c - b^9 + a^2 c^7 + a^3 c^6 + b^4 c^5 \\
& - 5 b^5 c^4 + 10 b^6 c^3 - 10 b^7 c^2 - 2 a b^2 c^6 + 14 a b^3 c^5 - 35 a b^4 c^4 + 40 a b^5 c^3 - 20 a b^6 c^2 - a^2 b c^6 - 6 a^2 b^6 c + 10 a^2 b^2 c^5 - 20 a^2 b^3 c^4 + 5 a^2 b^4 c^3 + 11 a^2 b^5 c^2 + 10 a^3 b^2 c^4 - \\
& 18 a^3 b^3 c^3 + 9 a^3 b^4 c^2 - 2 a^4 b^2 c^3 + 2 a b^7 c)) / a^4 * (- (b^8 + \\
& 8 a^3 c^5 + 8 a^4 c^4 - b^5 * (- (4 a c - b^2)^3)^{(1/2)} - b^6 c^2 + 8 a b^4 c^3 \\
& - 18 a^2 b^2 c^4 + 33 a^2 b^4 c^2 - 38 a^3 b^2 c^3 + b^3 c^2 * (- (4 a c - b^2)^3)^{(1/2)} - 10 a b^6 c - 3 a^2 b c^2 * (- (4 a c - b^2)^3)^{(1/2)} - 2 a b c^3 * (- (4 a c - b^2)^3)^{(1/2)} + 4 a b^3 c * (- (4 a c - b^2)^3)^{(1/2)}) / (2 * (a^6 b^4 \\
& - a^4 b^6 + 16 a^6 c^4 + 32 a^7 c^3 + 16 a^8 c^2 + 10 a^5 b^4 c - 8 a^7 b^2 c + a^4 b^4 c^2 - 8 a^5 b^2 c^3 - 32 a^6 b^2 c^2))^{(1/2)} * i) / ((((((8192 \\
& * (3 a^5 b^7 - 7 a^6 b^6 + 5 a^7 b^5 - a^8 b^4 + 12 a^7 c^5 + 20 a^8 c^4 + 4 \\
& * a^9 c^3 - 4 a^{10} c^2 - 5 a^5 b^6 c + 8 a^6 b c^5 - 15 a^6 b^5 c + 28 a^7 b \\
& * c^4 + 46 a^7 b^4 c + 64 a^8 b c^3 - 31 a^8 b^3 c + 44 a^9 b c^2 + 5 a^9 b^2 c \\
& - 2 a^5 b^3 c^4 + 5 a^5 b^4 c^3 - a^5 b^5 c^2 - 23 a^6 b^2 c^4 - 3 a^6 b^3 c^3 + 40 a^6 b^4 c^2 - 85 a^7 b^2 c^3 - 4 a^7 b^3 c^2 - 73 a^8 b^2 c^2) \\
& ) / a^4 - (8192 * \tan(x/2) * (- (b^8 + 8 a^3 c^5 + 8 a^4 c^4 - b^5 * (- (4 a c - b^2)^3)^{(1/2)} - b^6 c^2 + 8 a b^4 c^3 - 18 a^2 b^2 c^4 + 33 a^2 b^4 c^2 - 38 a^3 b^2 c^3 + b^3 c^2 * (- (4 a c - b^2)^3)^{(1/2)} - 10 a b^6 c - 3 a^2 b c^2 * (- (4 a c - b^2)^3)^{(1/2)} - 2 a b c^3 * (- (4 a c - b^2)^3)^{(1/2)} + 4 a b^3 c * (- (4 a c - b^2)^3)^{(1/2)}) / (2 * (a^6 b^4 - a^4 b^6 + 16 a^6 c^4 + 32 a^7 c^3 + 16 a^8 c^2 + 10 a^5 b^4 c - 8 a^7 b^2 c + a^4 b^4 c^2 - 8 a^5 b^2 c^3 - 32 a^6 b^2 c^2))^{(1/2)} * (8 a^{12} c + 2 a^6 b^7 - 6 a^7 b^6 + 8 a^8 b^5 - 8 a^9 b^4 + 6 a^{10} b^3 - 2 a^{11} b^2 + 24 a^8 c^5 + 16 a^9 c^4 - 32 a^{10} c^3 - 16 a^{11} c^2 - 2 a^6 b^6 c - 14 a^7 b^5 c - 8 a^8 b c^4 + 46 a^8 b^4 c + 88 a^9 b c^3 - 50 a^9 b^3 c + 72 a^{10} b c^2 + 36 a^{10} b^2 c + 2 a^6 b^4 c^3 - 2 a^6 b^5 c^2 - 14 a^7 b^2 c^4 + 10 a^7 b^3 c^3 + 24 a^7 b^4 c^2 - 68 a^8 b^2 c^3 + 2 a^8 b^3 c^2 - 80 a^9 b^2 c^2 - 24 a^{11} b c)) / a^4 * (- (b^8 + 8 a^3 c^5 + 8 a^4 c^4 - b^5 * (- (4 a c - b^2)^3)^{(1/2)} - b^6 c^2 + 8 a b^4 c^3 - 18 a^2 b^2 c^4 + 33 a^2 b^4 c^2 - 38 a^3 b^2 c^3 + b^3 c^2 * (- (4 a c - b^2)^3)^{(1/2)} - 10 a b^6 c - 3 a^2 b c^2 * (- (4 a c - b^2)^3)^{(1/2)} - 2 a b c^3 * (- (4 a c - b^2)^3)^{(1/2)} + 4 a b^3 c * (- (4 a c - b^2)^3)^{(1/2)}) / (2 * (a^6 b^4 - a^4 b^6
\end{aligned}$$

$$\begin{aligned}
& + 16a^6c^4 + 32a^7c^3 + 16a^8c^2 + 10a^5b^4c - 8a^7b^2c + a^4b^4c^2 - 8a^5b^2c^3 - 32a^6b^2c^2))^{(1/2)} - (8192\tan(x/2)*(6a^3b^8 - 2a^2b^9 - 8a^4b^7 + 8a^5b^6 - 6a^6b^5 + 2a^7b^4 + 10a^5c^6 + 6a^6c^5 - 2a^7c^4 + 2a^8c^3 + 2a^2b^8c + 14a^3b^7c - 50a^4b^6c - 22a^5b^5c + 56a^5b^5c + 12a^6b^4c - 38a^6b^4c + 18a^7b^3c + 24a^7b^3c - 8a^8b^2c - 2a^2b^6c^3 + 2a^2b^7c^2 + 14a^3b^4c^4 - 10a^3b^5c^3 - 24a^3b^6c^2 - 27a^4b^2c^5 + 15a^4b^3c^4 + 59a^4b^4c^3 + 7a^4b^5c^2 + 11a^5b^2c^4 - 122a^5b^3c^3 + 93a^5b^4c^2 + 37a^6b^2c^3 - 99a^6b^3c^2 + 23a^7b^2c^2))/a^4)*(-(b^8 + 8a^3c^5 + 8a^4c^4 - b^5*(-(4ac - b^2)^3)^{(1/2)} - b^6c^2 + 8ab^4c^3 - 18a^2b^2c^4 + 33a^2b^4c^2 - 38a^3b^2c^3 + b^3c^2*(-(4ac - b^2)^3)^{(1/2)} - 10ab^6c - 3a^2b^2c*(-(4ac - b^2)^3)^{(1/2)} - 2ab^3c*(-(4ac - b^2)^3)^{(1/2)} + 4ab^3c*(-(4ac - b^2)^3)^{(1/2)})/(2*(a^6b^4 - a^4b^6 + 16a^6c^4 + 32a^7c^3 + 16a^8c^2 + 10a^5b^4c - 8a^7b^2c + a^4b^4c^2 - 8a^5b^2c^3 - 32a^6b^2c^2))^{(1/2)} + (8192*(6a^2b^8 - 3ab^9 - 4a^3b^7 + a^4b^6 + 3a^4c^6 + 2a^5c^5 - a^6c^4 + 2ab^5c^4 - 5ab^6c^3 + ab^7c^2 + 16a^2b^7c + 8a^3b^6c - 38a^3b^6c + 10a^4b^5c + 23a^4b^5c + 6a^5b^4c - 5a^5b^4c - 10a^2b^3c^5 + 25a^2b^4c^4 + 4a^2b^5c^3 - 41a^2b^6c^2 - 20a^3b^2c^5 - 36a^3b^3c^4 + 91a^3b^4c^3 - 3a^3b^5c^2 - 24a^4b^2c^4 - 55a^4b^3c^3 + 57a^4b^4c^2 - 3a^5b^2c^3 - 28a^5b^3c^2 + 4a^6b^2c^2 + 5ab^8c))/a^4)*(-(b^8 + 8a^3c^5 + 8a^4c^4 - b^5*(-(4ac - b^2)^3)^{(1/2)} - b^6c^2 + 8ab^4c^3 - 18a^2b^2c^4 + 33a^2b^4c^2 - 38a^3b^2c^3 + b^3c^2*(-(4ac - b^2)^3)^{(1/2)} - 10ab^6c - 3a^2b^2c*(-(4ac - b^2)^3)^{(1/2)} - 2ab^3c*(-(4ac - b^2)^3)^{(1/2)} + 4ab^3c*(-(4ac - b^2)^3)^{(1/2)})/(2*(a^6b^4 - a^4b^6 + 16a^6c^4 + 32a^7c^3 + 16a^8c^2 + 10a^5b^4c - 8a^7b^2c + a^4b^4c^2 - 8a^5b^2c^3 - 32a^6b^2c^2))^{(1/2)} - (8192\tan(x/2)*(ab^8 + 5b^8c - b^9 + a^2c^7 + a^3c^6 + b^4c^5 - 5b^5c^4 + 10b^6c^3 - 10b^7c^2 - 2ab^2c^6 + 14ab^3c^5 - 35ab^4c^4 + 40ab^5c^3 - 20ab^6c^2 - a^2b^6c - 6a^2b^6c + 10a^2b^2c^5 - 20a^2b^3c^4 + 5a^2b^4c^3 + 11a^2b^5c^2 + 10a^3b^2c^4 - 18a^3b^3c^3 + 9a^3b^4c^2 - 2a^4b^2c^3 + 2ab^7c))/a^4)*(-(b^8 + 8a^3c^5 + 8a^4c^4 - b^5*(-(4ac - b^2)^3)^{(1/2)} - b^6c^2 + 8ab^4c^3 - 18a^2b^2c^4 + 33a^2b^4c^2 - 38a^3b^2c^3 + b^3c^2*(-(4ac - b^2)^3)^{(1/2)} - 10ab^6c - 3a^2b^2c*(-(4ac - b^2)^3)^{(1/2)} - 2ab^3c*(-(4ac - b^2)^3)^{(1/2)} + 4ab^3c*(-(4ac - b^2)^3)^{(1/2)})/(2*(a^6b^4 - a^4b^6 + 16a^6c^4 + 32a^7c^3 + 16a^8c^2 + 10a^5b^4c - 8a^7b^2c + a^4b^4c^2 - 8a^5b^2c^3 - 32a^6b^2c^2))^{(1/2)} + (((8192*(3a^5b^7 - 7a^6b^6 + 5a^7b^5 - a^8b^4 + 12a^7c^5 + 20a^8c^4 + 4a^9c^3 - 4a^10c^2 - 5a^5b^6c + 8a^6b^5c - 15a^6b^5c + 28a^7b^4c + 46a^7b^4c + 64a^8b^3c - 31a^8b^3c + 44a^9b^2c + 5a^9b^2c - 2a^5b^3c^4 + 5a^5b^4c^3 - a^5b^5c^2 - 23a^6b^2c^4 - 3a^6b^3c^3 + 40a^6b^4c^2 - 85a^7b^2c^3 - 4a^7b^3c^2 - 73a^8b^2c^2))/a^4 + (8192\tan(x/2)*(-(b^8 + 8a^3c^5 + 8a^4c^4 - b^5*(-(4ac - b^2)^3)^{(1/2)} - b^6c^2 + 8ab^4c^3 - 18a^2b^2c^4 + 33a^2b^4c^2 -
\end{aligned}$$

$$\begin{aligned}
& 38a^3b^2c^3 + b^3c^2(-4ac - b^2)^3)^{(1/2)} - 10ab^6c - 3a^2b^*c \\
& ^2(-4ac - b^2)^3)^{(1/2)} - 2a^*bc^3(-4ac - b^2)^3)^{(1/2)} + 4a^*b^3c \\
& c(-4ac - b^2)^3)^{(1/2)))/(2(a^6b^4 - a^4b^6 + 16a^6c^4 + 32a^7c^3 \\
& + 16a^8c^2 + 10a^5b^4c - 8a^7b^2c + a^4b^4c^2 - 8a^5b^2c^3 - \\
& 32a^6b^2c^2))^{(1/2)}(8a^{12}c + 2a^6b^7 - 6a^7b^6 + 8a^8b^5 - 8a \\
& ^9b^4 + 6a^{10}b^3 - 2a^{11}b^2 + 24a^8c^5 + 16a^9c^4 - 32a^{10}c^3 - \\
& 16a^{11}c^2 - 2a^6b^6c - 14a^7b^5c - 8a^8b^4c + 46a^8b^4c + 88a \\
& ^9b^3c^3 - 50a^9b^3c + 72a^{10}b^2c^2 + 36a^{10}b^2c + 2a^6b^4c^3 - \\
& 2a^6b^5c^2 - 14a^7b^2c^4 + 10a^7b^3c^3 + 24a^7b^4c^2 - 68a^8b \\
& ^2c^3 + 2a^8b^3c^2 - 80a^9b^2c^2 - 24a^{11}b^*c)/a^4)*(-(b^8 + 8a^3 \\
& *c^5 + 8a^4c^4 - b^5(-4ac - b^2)^3)^{(1/2)} - b^6c^2 + 8a^*b^4c^3 - 1 \\
& 8a^2b^2c^4 + 33a^2b^4c^2 - 38a^3b^2c^3 + b^3c^2(-4ac - b^2)^3 \\
& )^{(1/2)} - 10ab^6c - 3a^2b^*c^2(-4ac - b^2)^3)^{(1/2)} - 2a^*bc^3(- \\
& 4ac - b^2)^3)^{(1/2)} + 4a^*b^3c*(-4ac - b^2)^3)^{(1/2)))/(2(a^6b^4 - a \\
& ^4b^6 + 16a^6c^4 + 32a^7c^3 + 16a^8c^2 + 10a^5b^4c - 8a^7b^2c \\
& + a^4b^4c^2 - 8a^5b^2c^3 - 32a^6b^2c^2))^{(1/2)} + (8192\tan(x/2)*(6 \\
& *a^3b^8 - 2a^2b^9 - 8a^4b^7 + 8a^5b^6 - 6a^6b^5 + 2a^7b^4 + 10a \\
& ^5c^6 + 6a^6c^5 - 2a^7c^4 + 2a^8c^3 + 2a^2b^8c + 14a^3b^7c - 5 \\
& 0a^4b^6c - 22a^5b^*c^5 + 56a^5b^5c + 12a^6b^*c^4 - 38a^6b^4c + 1 \\
& 8a^7b^*c^3 + 24a^7b^3c - 8a^8b^2c - 2a^2b^6c^3 + 2a^2b^7c^2 + \\
& 14a^3b^4c^4 - 10a^3b^5c^3 - 24a^3b^6c^2 - 27a^4b^2c^5 + 15a^4b \\
& ^3c^4 + 59a^4b^4c^3 + 7a^4b^5c^2 + 11a^5b^2c^4 - 122a^5b^3c^3 \\
& + 93a^5b^4c^2 + 37a^6b^2c^3 - 99a^6b^3c^2 + 23a^7b^2c^2))/a^4) \\
& *(-(b^8 + 8a^3c^5 + 8a^4c^4 - b^5(-4ac - b^2)^3)^{(1/2)} - b^6c^2 + \\
& 8a^*b^4c^3 - 18a^2b^2c^4 + 33a^2b^4c^2 - 38a^3b^2c^3 + b^3c^2(- \\
& 4ac - b^2)^3)^{(1/2)} - 10ab^6c - 3a^2b^*c^2(-4ac - b^2)^3)^{(1/2)} \\
& - 2a^*bc^3(-4ac - b^2)^3)^{(1/2)} + 4a^*b^3c*(-4ac - b^2)^3)^{(1/2)))/ \\
& (2(a^6b^4 - a^4b^6 + 16a^6c^4 + 32a^7c^3 + 16a^8c^2 + 10a^5b^4c \\
& - 8a^7b^2c + a^4b^4c^2 - 8a^5b^2c^3 - 32a^6b^2c^2))^{(1/2)} + (8 \\
& 192*(6a^2b^8 - 3a^*b^9 - 4a^3b^7 + a^4b^6 + 3a^4c^6 + 2a^5c^5 - a^ \\
& 6c^4 + 2a^*b^5c^4 - 5a^*b^6c^3 + a^*b^7c^2 + 16a^2b^7c + 8a^3b^*c^6 \\
& - 38a^3b^6c + 10a^4b^*c^5 + 23a^4b^5c + 6a^5b^*c^4 - 5a^5b^4c - \\
& 10a^2b^3c^5 + 25a^2b^4c^4 + 4a^2b^5c^3 - 41a^2b^6c^2 - 20a^3b \\
& ^2c^5 - 36a^3b^3c^4 + 91a^3b^4c^3 - 3a^3b^5c^2 - 24a^4b^2c^4 - \\
& 55a^4b^3c^3 + 57a^4b^4c^2 - 3a^5b^2c^3 - 28a^5b^3c^2 + 4a^6b \\
& ^2c^2 + 5a^*b^8c))/a^4)*(-(b^8 + 8a^3c^5 + 8a^4c^4 - b^5(-4ac - b \\
& ^2)^3)^{(1/2)} - b^6c^2 + 8a^*b^4c^3 - 18a^2b^2c^4 + 33a^2b^4c^2 - 38 \\
& *a^3b^2c^3 + b^3c^2(-4ac - b^2)^3)^{(1/2)} - 10ab^6c - 3a^2b^*c^2* \\
& (-4ac - b^2)^3)^{(1/2)} - 2a^*bc^3(-4ac - b^2)^3)^{(1/2)} + 4a^*b^3c*(- \\
& 4ac - b^2)^3)^{(1/2)))/(2(a^6b^4 - a^4b^6 + 16a^6c^4 + 32a^7c^3 + \\
& 16a^8c^2 + 10a^5b^4c - 8a^7b^2c + a^4b^4c^2 - 8a^5b^2c^3 - 32a \\
& ^6b^2c^2))^{(1/2)} + (8192\tan(x/2)*(a^*b^8 + 5b^8c - b^9 + a^2c^7 + a^ \\
& 3c^6 + b^4c^5 - 5b^5c^4 + 10b^6c^3 - 10b^7c^2 - 2a^*b^2c^6 + 14a^* \\
& b^3c^5 - 35a^*b^4c^4 + 40a^*b^5c^3 - 20a^*b^6c^2 - a^2b^*c^6 - 6a^2b^ \\
& 6c + 10a^2b^2c^5 - 20a^2b^3c^4 + 5a^2b^4c^3 + 11a^2b^5c^2 + 10
\end{aligned}$$

$$\begin{aligned}
& *a^3*b^2*c^4 - 18*a^3*b^3*c^3 + 9*a^3*b^4*c^2 - 2*a^4*b^2*c^3 + 2*a*b^7*c) \\
& /a^4)*(-(b^8 + 8*a^3*c^5 + 8*a^4*c^4 - b^5*(-(4*a*c - b^2)^3)^{(1/2)} - b^6*c^2 + 8*a*b^4*c^3 - 18*a^2*b^2*c^4 + 33*a^2*b^4*c^2 - 38*a^3*b^2*c^3 + b^3*c^2*(-(4*a*c - b^2)^3)^{(1/2)} - 10*a*b^6*c - 3*a^2*b*c^2*(-(4*a*c - b^2)^3)^{(1/2)} - 2*a*b*c^3*(-(4*a*c - b^2)^3)^{(1/2)} + 4*a*b^3*c*(-(4*a*c - b^2)^3)^{(1/2)))/(2*(a^6*b^4 - a^4*b^6 + 16*a^6*c^4 + 32*a^7*c^3 + 16*a^8*c^2 + 10*a^5*b^4*c - 8*a^7*b^2*c + a^4*b^4*c^2 - 8*a^5*b^2*c^3 - 32*a^6*b^2*c^2)))^{(1/2)} \\
& + (16384*(b*c^7 - 4*b^2*c^6 + 6*b^3*c^5 - 4*b^4*c^4 + b^5*c^3 - 2*a*b^2*c^5 + 2*a*b^3*c^4 - a*b^4*c^3 + a^2*b^2*c^4 + a*b*c^6))/a^4))*(-(b^8 + 8*a^3*c^5 + 8*a^4*c^4 - b^5*(-(4*a*c - b^2)^3)^{(1/2)} - b^6*c^2 + 8*a*b^4*c^3 - 18*a^2*b^2*c^4 + 33*a^2*b^4*c^2 - 38*a^3*b^2*c^3 + b^3*c^2*(-(4*a*c - b^2)^3)^{(1/2)} - 10*a*b^6*c - 3*a^2*b*c^2*(-(4*a*c - b^2)^3)^{(1/2)} - 2*a*b*c^3*(-(4*a*c - b^2)^3)^{(1/2)} + 4*a*b^3*c*(-(4*a*c - b^2)^3)^{(1/2)))/(2*(a^6*b^4 - a^4*b^6 + 16*a^6*c^4 + 32*a^7*c^3 + 16*a^8*c^2 + 10*a^5*b^4*c - 8*a^7*b^2*c + a^4*b^4*c^2 - 8*a^5*b^2*c^3 - 32*a^6*b^2*c^2)))^{(1/2)}*2i - \operatorname{atan}(((((((8192*(3*a^5*b^7 - 7*a^6*b^6 + 5*a^7*b^5 - a^8*b^4 + 12*a^7*c^5 + 20*a^8*c^4 + 4*a^9*c^3 - 4*a^10*c^2 - 5*a^5*b^6*c + 8*a^6*b*c^5 - 15*a^6*b^5*c + 28*a^7*b*c^4 + 46*a^7*b^4*c + 64*a^8*b*c^3 - 31*a^8*b^3*c + 44*a^9*b*c^2 + 5*a^9*b^2*c - 2*a^5*b^3*c^4 + 5*a^5*b^4*c^3 - a^5*b^5*c^2 - 23*a^6*b^2*c^4 - 3*a^6*b^3*c^3 + 40*a^6*b^4*c^2 - 85*a^7*b^2*c^3 - 4*a^7*b^3*c^2 - 73*a^8*b^2*c^2))/a^4 - (8192*\tan(x/2))*(-(b^8 + 8*a^3*c^5 + 8*a^4*c^4 + b^5*(-(4*a*c - b^2)^3)^{(1/2)} - b^6*c^2 + 8*a*b^4*c^3 - 18*a^2*b^2*c^4 + 33*a^2*b^4*c^2 - 38*a^3*b^2*c^3 - b^3*c^2*(-(4*a*c - b^2)^3)^{(1/2)} - 10*a*b^6*c + 3*a^2*b*c^2*(-(4*a*c - b^2)^3)^{(1/2)} + 2*a*b*c^3*(-(4*a*c - b^2)^3)^{(1/2)} - 4*a*b^3*c*(-(4*a*c - b^2)^3)^{(1/2)))/(2*(a^6*b^4 - a^4*b^6 + 16*a^6*c^4 + 32*a^7*c^3 + 16*a^8*c^2 + 10*a^5*b^4*c - 8*a^7*b^2*c + a^4*b^4*c^2 - 8*a^5*b^2*c^3 - 32*a^6*b^2*c^2)))^{(1/2)}*(8*a^12*c + 2*a^6*b^7 - 6*a^7*b^6 + 8*a^8*b^5 - 8*a^9*b^4 + 6*a^10*b^3 - 2*a^11*b^2 + 24*a^8*c^5 + 16*a^9*c^4 - 32*a^10*c^3 - 16*a^11*c^2 - 2*a^6*b^6*c - 14*a^7*b^5*c - 8*a^8*b*c^4 + 46*a^8*b^4*c + 88*a^9*b*c^3 - 50*a^9*b^3*c + 72*a^10*b*c^2 + 36*a^10*b^2*c + 2*a^6*b^4*c^3 - 2*a^6*b^5*c^2 - 14*a^7*b^2*c^4 + 10*a^7*b^3*c^3 + 24*a^7*b^4*c^2 - 68*a^8*b^2*c^3 + 2*a^8*b^3*c^2 - 80*a^9*b^2*c^2 - 24*a^11*b*c))/a^4)*(-(b^8 + 8*a^3*c^5 + 8*a^4*c^4 + b^5*(-(4*a*c - b^2)^3)^{(1/2)} - b^6*c^2 + 8*a*b^4*c^3 - 18*a^2*b^2*c^4 + 33*a^2*b^4*c^2 - 38*a^3*b^2*c^3 - b^3*c^2*(-(4*a*c - b^2)^3)^{(1/2)} - 10*a*b^6*c + 3*a^2*b*c^2*(-(4*a*c - b^2)^3)^{(1/2)} + 2*a*b*c^3*(-(4*a*c - b^2)^3)^{(1/2)} - 4*a*b^3*c*(-(4*a*c - b^2)^3)^{(1/2)))/(2*(a^6*b^4 - a^4*b^6 + 16*a^6*c^4 + 32*a^7*c^3 + 16*a^8*c^2 + 10*a^5*b^4*c - 8*a^7*b^2*c + a^4*b^4*c^2 - 8*a^5*b^2*c^3 - 32*a^6*b^2*c^2)))^{(1/2)} - (8192*\tan(x/2))*(6*a^3*b^8 - 2*a^2*b^9 - 8*a^4*b^7 + 8*a^5*b^6 - 6*a^6*b^5 + 2*a^7*b^4 + 10*a^5*c^6 + 6*a^6*c^5 - 2*a^7*c^4 + 2*a^8*c^3 + 2*a^2*b^8*c + 14*a^3*b^7*c - 50*a^4*b^6*c - 22*a^5*b*c^5 + 56*a^5*b^5*c + 12*a^6*b*c^4 - 38*a^6*b^4*c + 18*a^7*b*c^3 + 24*a^7*b^3*c - 8*a^8*b^2*c - 2*a^2*b^6*c^3 + 2*a^2*b^7*c^2 + 14*a^3*b^4*c^4 - 10*a^3*b^5*c^3 - 24*a^3*b^6*c^2 - 27*a^4*b^2*c^5 + 15*a^4*b^3*c^4 + 59*a^4*b^4*c^3 + 7*a^4*b^5*c^2 + 11*a^5*b^2*c^4 - 122*a^5*b^3*c^3 + 93*a^5*b^4*c^2 + 37*a^6*b^2*c^3 - 99*a^6*b^3*c^2 + 23*a^7*b^2*c^2))/a^4)*(-(b^
\end{aligned}$$



$$\begin{aligned}
& 8 + 8a^3c^5 + 8a^4c^4 + b^5(-4ac - b^2)^3)^{1/2} - b^6c^2 + 8ab^4c^3 - 18a^2b^2c^4 + 33a^2b^4c^2 - 38a^3b^2c^3 - b^3c^2(-4ac - b^2)^3)^{1/2} - 10ab^6c + 3a^2b^2c^2(-4ac - b^2)^3)^{1/2} + 2ab^2c^3(-4ac - b^2)^3)^{1/2} - 4ab^3c(-4ac - b^2)^3)^{1/2})/(2(a^6b^4 - a^4b^6 + 16a^6c^4 + 32a^7c^3 + 16a^8c^2 + 10a^5b^4c - 8a^7b^2c + a^4b^4c^2 - 8a^5b^2c^3 - 32a^6b^2c^2))^{1/2} + (8192(6a^2b^8 - 3ab^9 - 4a^3b^7 + a^4b^6 + 3a^4c^6 + 2a^5c^5 - a^6c^4 + 2ab^5c^4 - 5ab^6c^3 + ab^7c^2 + 16a^2b^7c + 8a^3b^6c - 38a^3b^6c + 10a^4b^5c + 23a^4b^5c + 6a^5b^4c - 5a^5b^4c - 10a^2b^3c^5 + 25a^2b^4c^4 + 4a^2b^5c^3 - 41a^2b^6c^2 - 20a^3b^2c^5 - 36a^3b^3c^4 + 91a^3b^4c^3 - 3a^3b^5c^2 - 24a^4b^2c^4 - 55a^4b^3c^3 + 57a^4b^4c^2 - 3a^5b^2c^3 - 28a^5b^3c^2 + 4a^6b^2c^2 + 5ab^8c))/a^4)*(-(b^8 + 8a^3c^5 + 8a^4c^4 + b^5(-4ac - b^2)^3)^{1/2} - b^6c^2 + 8ab^4c^3 - 18a^2b^2c^4 + 33a^2b^4c^2 - 38a^3b^2c^3 - b^3c^2(-4ac - b^2)^3)^{1/2} - 10ab^6c + 3a^2b^2c^2(-4ac - b^2)^3)^{1/2} + 2ab^2c^3(-4ac - b^2)^3)^{1/2} - 4ab^3c(-4ac - b^2)^3)^{1/2})/(2(a^6b^4 - a^4b^6 + 16a^6c^4 + 32a^7c^3 + 16a^8c^2 + 10a^5b^4c - 8a^7b^2c + a^4b^4c^2 - 8a^5b^2c^3 - 32a^6b^2c^2))^{1/2} - (8192\tan(x/2)*(ab^8 + 5b^8c - b^9 + a^2c^7 + a^3c^6 + b^4c^5 - 5b^5c^4 + 10b^6c^3 - 10b^7c^2 - 2ab^2c^6 + 14ab^3c^5 - 35ab^4c^4 + 40ab^5c^3 - 20ab^6c^2 - a^2b^6c - 6a^2b^6c + 10a^2b^2c^5 - 20a^2b^3c^4 + 5a^2b^4c^3 + 11a^2b^5c^2 + 10a^3b^2c^4 - 18a^3b^3c^3 + 9a^3b^4c^2 - 2a^4b^2c^3 + 2ab^7c))/a^4)*(-(b^8 + 8a^3c^5 + 8a^4c^4 + b^5(-4ac - b^2)^3)^{1/2} - b^6c^2 + 8ab^4c^3 - 18a^2b^2c^4 + 33a^2b^4c^2 - 38a^3b^2c^3 - b^3c^2(-4ac - b^2)^3)^{1/2} - 10ab^6c + 3a^2b^2c^2(-4ac - b^2)^3)^{1/2} + 2ab^2c^3(-4ac - b^2)^3)^{1/2} - 4ab^3c(-4ac - b^2)^3)^{1/2})/(2(a^6b^4 - a^4b^6 + 16a^6c^4 + 32a^7c^3 + 16a^8c^2 + 10a^5b^4c - 8a^7b^2c + a^4b^4c^2 - 8a^5b^2c^3 - 32a^6b^2c^2))^{1/2} * i - (((((8192(3a^5b^7 - 7a^6b^6 + 5a^7b^5 - a^8b^4 + 12a^7c^5 + 20a^8c^4 + 4a^9c^3 - 4a^10c^2 - 5a^5b^6c + 8a^6b^5c - 15a^6b^5c + 28a^7b^4c + 46a^7b^4c + 64a^8b^3c - 31a^8b^3c + 44a^9b^2c + 5a^9b^2c - 2a^5b^3c^4 + 5a^5b^4c^3 - a^5b^5c^2 - 23a^6b^2c^4 - 3a^6b^3c^3 + 40a^6b^4c^2 - 85a^7b^2c^3 - 4a^7b^3c^2 - 73a^8b^2c^2))/a^4 + (8192\tan(x/2)*(-(b^8 + 8a^3c^5 + 8a^4c^4 + b^5(-4ac - b^2)^3)^{1/2} - b^6c^2 + 8ab^4c^3 - 18a^2b^2c^4 + 33a^2b^4c^2 - 38a^3b^2c^3 - b^3c^2(-4ac - b^2)^3)^{1/2} - 10ab^6c + 3a^2b^2c^2(-4ac - b^2)^3)^{1/2} + 2ab^2c^3(-4ac - b^2)^3)^{1/2} - 4ab^3c(-4ac - b^2)^3)^{1/2})/(2(a^6b^4 - a^4b^6 + 16a^6c^4 + 32a^7c^3 + 16a^8c^2 + 10a^5b^4c - 8a^7b^2c + a^4b^4c^2 - 8a^5b^2c^3 - 32a^6b^2c^2))^{1/2} * (8a^12c + 2a^6b^7 - 6a^7b^6 + 8a^8b^5 - 8a^9b^4 + 6a^10b^3 - 2a^11b^2 + 24a^8c^5 + 16a^9c^4 - 32a^10c^3 - 16a^11c^2 - 2a^6b^6c - 14a^7b^5c - 8a^8b^4c + 46a^8b^4c + 88a^9b^3c - 50a^9b^3c + 72a^10b^2c + 36a^10b^2c + 2a^6b^4c^3 - 2a^6b^5c^2 - 14a^7b^2c^4 + 10a^7b^3c^3 + 24a^7b^4c^2 - 68a^
\end{aligned}$$

$$\begin{aligned}
& 8b^2c^3 + 2a^8b^3c^2 - 80a^9b^2c^2 - 24a^{11}bc)) / a^4 * (- (b^8 + 8a^3c^5 + 8a^4c^4 + b^5 * (- (4ac - b^2)^3)^{1/2} - b^6c^2 + 8ab^4c^3 \\
& - 18a^2b^2c^4 + 33a^2b^4c^2 - 38a^3b^2c^3 - b^3c^2 * (- (4ac - b^2)^3)^{1/2} - 10ab^6c + 3a^2b^2c^2 * (- (4ac - b^2)^3)^{1/2} + 2ab^3c^3 * \\
& (- (4ac - b^2)^3)^{1/2} - 4ab^3c * (- (4ac - b^2)^3)^{1/2}) / (2 * (a^6b^4 - a^4b^6 + 16a^6c^4 + 32a^7c^3 + 16a^8c^2 + 10a^5b^4c - 8a^7b^2 \\
& * c + a^4b^4c^2 - 8a^5b^2c^3 - 32a^6b^2c^2)))^{1/2} + (8192 * \tan(x/2) * (6a^3b^8 - 2a^2b^9 - 8a^4b^7 + 8a^5b^6 - 6a^6b^5 + 2a^7b^4 + 1 \\
& 0a^5c^6 + 6a^6c^5 - 2a^7c^4 + 2a^8c^3 + 2a^2b^8c + 14a^3b^7c - 50a^4b^6c - 22a^5b^5c + 56a^5b^5c + 12a^6b^4c - 38a^6b^4c \\
& + 18a^7b^3c + 24a^7b^3c - 8a^8b^2c - 2a^2b^6c^3 + 2a^2b^7c^2 + 14a^3b^4c^4 - 10a^3b^5c^3 - 24a^3b^6c^2 - 27a^4b^2c^5 + 15a^4 \\
& b^3c^4 + 59a^4b^4c^3 + 7a^4b^5c^2 + 11a^5b^2c^4 - 122a^5b^3c^3 + 93a^5b^4c^2 + 37a^6b^2c^3 - 99a^6b^3c^2 + 23a^7b^2c^2)) / a^4 * (- (b^8 + 8a^3c^5 + 8a^4c^4 + b^5 * (- (4ac - b^2)^3)^{1/2} - b^6c^2 \\
& + 8ab^4c^3 - 18a^2b^2c^4 + 33a^2b^4c^2 - 38a^3b^2c^3 - b^3c^2 * (- (4ac - b^2)^3)^{1/2} - 10ab^6c + 3a^2b^2c^2 * (- (4ac - b^2)^3)^{1/2} + 2ab^3c^3 * (- (4ac - b^2)^3)^{1/2} - 4ab^3c * (- (4ac - b^2)^3)^{1/2}) / (2 * (a^6b^4 - a^4b^6 + 16a^6c^4 + 32a^7c^3 + 16a^8c^2 + 10a^5b^4c - 8a^7b^2c + a^4b^4c^2 - 8a^5b^2c^3 - 32a^6b^2c^2)))^{1/2} + (8192 * (6a^2b^8 - 3ab^9 - 4a^3b^7 + a^4b^6 + 3a^4c^6 + 2a^5c^5 - a^6c^4 + 2ab^5c^4 - 5ab^6c^3 + ab^7c^2 + 16a^2b^7c + 8a^3b^6c - 38a^3b^6c + 10a^4b^5c + 23a^4b^5c + 6a^5b^4c - 5a^5b^4c - 10a^2b^3c^5 + 25a^2b^4c^4 + 4a^2b^5c^3 - 41a^2b^6c^2 - 20a^3b^2c^5 - 36a^3b^3c^4 + 91a^3b^4c^3 - 3a^3b^5c^2 - 24a^4b^2c^4 - 55a^4b^3c^3 + 57a^4b^4c^2 - 3a^5b^2c^3 - 28a^5b^3c^2 + 4a^6b^2c^2 + 5ab^8c)) / a^4 * (- (b^8 + 8a^3c^5 + 8a^4c^4 + b^5 * (- (4ac - b^2)^3)^{1/2} - b^6c^2 + 8ab^4c^3 - 18a^2b^2c^4 + 33a^2b^4c^2 - 38a^3b^2c^3 - b^3c^2 * (- (4ac - b^2)^3)^{1/2} - 10ab^6c + 3a^2b^2c^2 * (- (4ac - b^2)^3)^{1/2} + 2ab^3c^3 * (- (4ac - b^2)^3)^{1/2} - 4ab^3c * (- (4ac - b^2)^3)^{1/2}) / (2 * (a^6b^4 - a^4b^6 + 16a^6c^4 + 32a^7c^3 + 16a^8c^2 + 10a^5b^4c - 8a^7b^2c + a^4b^4c^2 - 8a^5b^2c^3 - 32a^6b^2c^2)))^{1/2} + (8192 * \tan(x/2) * (ab^8 + 5b^8c - b^9 + a^2c^7 + a^3c^6 + b^4c^5 - 5b^5c^4 + 10b^6c^3 - 10b^7c^2 - 2ab^2c^6 + 14ab^3c^5 - 35ab^4c^4 + 40ab^5c^3 - 20ab^6c^2 - a^2b^6c - 6a^2b^6c + 10a^2b^2c^5 - 20a^2b^3c^4 + 5a^2b^4c^3 + 11a^2b^5c^2 + 10a^3b^2c^4 - 18a^3b^3c^3 + 9a^3b^4c^2 - 2a^4b^2c^3 + 2ab^7c)) / a^4 * (- (b^8 + 8a^3c^5 + 8a^4c^4 + b^5 * (- (4ac - b^2)^3)^{1/2} - b^6c^2 + 8ab^4c^3 - 18a^2b^2c^4 + 33a^2b^4c^2 - 38a^3b^2c^3 - b^3c^2 * (- (4ac - b^2)^3)^{1/2} - 10ab^6c + 3a^2b^2c^2 * (- (4ac - b^2)^3)^{1/2} + 2ab^3c^3 * (- (4ac - b^2)^3)^{1/2} - 4ab^3c * (- (4ac - b^2)^3)^{1/2}) / (2 * (a^6b^4 - a^4b^6 + 16a^6c^4 + 32a^7c^3 + 16a^8c^2 + 10a^5b^4c - 8a^7b^2c + a^4b^4c^2 - 8a^5b^2c^3 - 32a^6b^2c^2)))^{1/2} + (8192 * (3a^5b^7 - 7a^6b^6 + 5a^7b^5 - a^8b^4 + 12a^7c^5 + 20a^8c^4 + 4a^9c^3 - 4a^{10}c^2 - 5a^5b^6c + 8a^6b^5c - 15a^
\end{aligned}$$

$$\begin{aligned}
& 6*b^5*c + 28*a^7*b*c^4 + 46*a^7*b^4*c + 64*a^8*b*c^3 - 31*a^8*b^3*c + 44*a^9*b*c^2 + 5*a^9*b^2*c - 2*a^5*b^3*c^4 + 5*a^5*b^4*c^3 - a^5*b^5*c^2 - 23*a^6*b^2*c^4 - 3*a^6*b^3*c^3 + 40*a^6*b^4*c^2 - 85*a^7*b^2*c^3 - 4*a^7*b^3*c^2 \\
& - 73*a^8*b^2*c^2)/a^4 - (8192*\tan(x/2)*(-(b^8 + 8*a^3*c^5 + 8*a^4*c^4 + b^5*(-(4*a*c - b^2)^3)^{1/2} - b^6*c^2 + 8*a*b^4*c^3 - 18*a^2*b^2*c^4 + 33*a^2*b^4*c^2 - 38*a^3*b^2*c^3 - b^3*c^2*(-(4*a*c - b^2)^3)^{1/2} - 10*a*b^6*c + 3*a^2*b*c^2*(-(4*a*c - b^2)^3)^{1/2} + 2*a*b*c^3*(-(4*a*c - b^2)^3)^{1/2} ) - 4*a*b^3*c*(-(4*a*c - b^2)^3)^{1/2})/(2*(a^6*b^4 - a^4*b^6 + 16*a^6*c^4 + 32*a^7*c^3 + 16*a^8*c^2 + 10*a^5*b^4*c - 8*a^7*b^2*c + a^4*b^4*c^2 - 8*a^5*b^2*c^3 - 32*a^6*b^2*c^2)))^{1/2}*(8*a^12*c + 2*a^6*b^7 - 6*a^7*b^6 + 8*a^8*b^5 - 8*a^9*b^4 + 6*a^10*b^3 - 2*a^11*b^2 + 24*a^8*c^5 + 16*a^9*c^4 - 32*a^10*c^3 - 16*a^11*c^2 - 2*a^6*b^6*c - 14*a^7*b^5*c - 8*a^8*b*c^4 + 46*a^8*b^4*c + 88*a^9*b*c^3 - 50*a^9*b^3*c + 72*a^10*b*c^2 + 36*a^10*b^2*c + 2*a^6*b^4*c^3 - 2*a^6*b^5*c^2 - 14*a^7*b^2*c^4 + 10*a^7*b^3*c^3 + 24*a^7*b^4*c^2 - 68*a^8*b^2*c^3 + 2*a^8*b^3*c^2 - 80*a^9*b^2*c^2 - 24*a^11*b*c))/a^4)*(-(b^8 + 8*a^3*c^5 + 8*a^4*c^4 + b^5*(-(4*a*c - b^2)^3)^{1/2} - b^6*c^2 + 8*a*b^4*c^3 - 18*a^2*b^2*c^4 + 33*a^2*b^4*c^2 - 38*a^3*b^2*c^3 - b^3*c^2*(-(4*a*c - b^2)^3)^{1/2} - 10*a*b^6*c + 3*a^2*b*c^2*(-(4*a*c - b^2)^3)^{1/2} + 2*a*b*c^3*(-(4*a*c - b^2)^3)^{1/2} - 4*a*b^3*c*(-(4*a*c - b^2)^3)^{1/2}))/2*(a^6*b^4 - a^4*b^6 + 16*a^6*c^4 + 32*a^7*c^3 + 16*a^8*c^2 + 10*a^5*b^4*c - 8*a^7*b^2*c + a^4*b^4*c^2 - 8*a^5*b^2*c^3 - 32*a^6*b^2*c^2)))^{1/2} - (8192*\tan(x/2)*(6*a^3*b^8 - 2*a^2*b^9 - 8*a^4*b^7 + 8*a^5*b^6 - 6*a^6*b^5 + 2*a^7*b^4 + 10*a^5*c^6 + 6*a^6*c^5 - 2*a^7*c^4 + 2*a^8*c^3 + 2*a^2*b^8*c + 14*a^3*b^7*c - 50*a^4*b^6*c - 22*a^5*b*c^5 + 56*a^5*b^5*c + 12*a^6*b*c^4 - 38*a^6*b^4*c + 18*a^7*b*c^3 + 24*a^7*b^3*c - 8*a^8*b^2*c - 2*a^2*b^6*c^3 + 2*a^2*b^7*c^2 + 14*a^3*b^4*c^4 - 10*a^3*b^5*c^3 - 24*a^3*b^6*c^2 - 27*a^4*b^2*c^5 + 15*a^4*b^3*c^4 + 59*a^4*b^4*c^3 + 7*a^4*b^5*c^2 + 11*a^5*b^2*c^4 - 122*a^5*b^3*c^3 + 93*a^5*b^4*c^2 + 37*a^6*b^2*c^3 - 99*a^6*b^3*c^2 + 23*a^7*b^2*c^2))/a^4)*(-(b^8 + 8*a^3*c^5 + 8*a^4*c^4 + b^5*(-(4*a*c - b^2)^3)^{1/2} - b^6*c^2 + 8*a*b^4*c^3 - 18*a^2*b^2*c^4 + 33*a^2*b^4*c^2 - 38*a^3*b^2*c^3 - b^3*c^2*(-(4*a*c - b^2)^3)^{1/2} - 10*a*b^6*c + 3*a^2*b*c^2*(-(4*a*c - b^2)^3)^{1/2} + 2*a*b*c^3*(-(4*a*c - b^2)^3)^{1/2} - 4*a*b^3*c*(-(4*a*c - b^2)^3)^{1/2}))/2*(a^6*b^4 - a^4*b^6 + 16*a^6*c^4 + 32*a^7*c^3 + 16*a^8*c^2 + 10*a^5*b^4*c - 8*a^7*b^2*c + a^4*b^4*c^2 - 8*a^5*b^2*c^3 - 32*a^6*b^2*c^2)))^{1/2} + (8192*(6*a^2*b^8 - 3*a*b^9 - 4*a^3*b^7 + a^4*b^6 + 3*a^4*c^6 + 2*a^5*c^5 - a^6*c^4 + 2*a*b^5*c^4 - 5*a*b^6*c^3 + a*b^7*c^2 + 16*a^2*b^7*c + 8*a^3*b*c^6 - 38*a^3*b^6*c + 10*a^4*b*c^5 + 23*a^4*b^5*c + 6*a^5*b*c^4 - 5*a^5*b^4*c - 10*a^2*b^3*c^5 + 25*a^2*b^4*c^4 + 4*a^2*b^5*c^3 - 41*a^2*b^6*c^2 - 20*a^3*b^2*c^5 - 36*a^3*b^3*c^4 + 91*a^3*b^4*c^3 - 3*a^3*b^5*c^2 - 24*a^4*b^2*c^4 - 55*a^4*b^3*c^3 + 57*a^4*b^4*c^2 - 3*a^5*b^2*c^3 - 28*a^5*b^3*c^2 + 4*a^6*b^2*c^2 + 5*a*b^8*c))/a^4)*(-(b^8 + 8*a^3*c^5 + 8*a^4*c^4 + b^5*(-(4*a*c - b^2)^3)^{1/2} - b^6*c^2 + 8*a*b^4*c^3 - 18*a^2*b^2*c^4 + 33*a^2*b^4*c^2 - 38*a^3*b^2*c^3 - b^3*c^2*(-(4*a*c - b^2)^3)^{1/2} - 10*a*b^6*c + 3*a^2*b*c^2*(-(4*a*c - b^2)^3)^{1/2} + 2*a*b*c^3*(-(4*a*c - b^2)^3)^{1/2} - 4*a*b^3*c*(-(4*a*c - b^2)^3)^{1/2}))/2*(a^6*b^4 - a^4*b^6 + 16*a^6*c^4 + 3
\end{aligned}$$

$$\begin{aligned}
& 2a^7c^3 + 16a^8c^2 + 10a^5b^4c - 8a^7b^2c + a^4b^4c^2 - 8a^5b^2c^3 - 32a^6b^2c^2))^{(1/2)} - (8192\tan(x/2)*(a*b^8 + 5b^8c - b^9 + \\
& a^2c^7 + a^3c^6 + b^4c^5 - 5b^5c^4 + 10b^6c^3 - 10b^7c^2 - 2a*b^2c^6 + 14a*b^3c^5 - 35a*b^4c^4 + 40a*b^5c^3 - 20a*b^6c^2 - a^2b*c^6 \\
& - 6a^2b^6c + 10a^2b^2c^5 - 20a^2b^3c^4 + 5a^2b^4c^3 + 11a^2b^5c^2 + 10a^3b^2c^4 - 18a^3b^3c^3 + 9a^3b^4c^2 - 2a^4b^2c^3 + \\
& 2a*b^7c))/a^4)*(-(b^8 + 8a^3c^5 + 8a^4c^4 + b^5*(-(4a*c - b^2)^3))^{(1/2)} - b^6c^2 + 8a*b^4c^3 - 18a^2b^2c^4 + 33a^2b^4c^2 - 38a^3b^2c^3 \\
& *c^3 - b^3c^2*(-(4a*c - b^2)^3)^{(1/2)} - 10a*b^6c + 3a^2b*c^2*(-(4a*c - b^2)^3)^{(1/2)} + 2a*b*c^3*(-(4a*c - b^2)^3)^{(1/2)} - 4a*b^3c*(-(4a*c \\
& - b^2)^3)^{(1/2)))/(2*(a^6b^4 - a^4b^6 + 16a^6c^4 + 32a^7c^3 + 16a^8c^2 + 10a^5b^4c - 8a^7b^2c + a^4b^4c^2 - 8a^5b^2c^3 - 32a^6b^2c^2))^{(1/2)} + ((((((8192*(3a^5b^7 - 7a^6b^6 + 5a^7b^5 - a^8b^4 + 12a^7c^5 \\
& + 20a^8c^4 + 4a^9c^3 - 4a^10c^2 - 5a^5b^6c + 8a^6b^5c^5 - 15a^6b^5c + 28a^7b^4c^4 + 46a^7b^4c + 64a^8b^3c^3 - 31a^8b^3c + 44a^9b^2c^2 + 5a^9b^2c - 2a^5b^3c^4 + 5a^5b^4c^3 - a^5b^5c^2 - 23a^6b^2c^4 - 3a^6b^3c^3 + 40a^6b^4c^2 - 85a^7b^2c^3 - 4a^7b^3c^2 - 73a^8b^2c^2))/a^4 + (8192\tan(x/2)*(-(b^8 + 8a^3c^5 + 8a^4c^4 + b^5*(-(4a*c - b^2)^3))^{(1/2)} - b^6c^2 + 8a*b^4c^3 - 18a^2b^2c^4 + 33a^2b^4c^2 - 38a^3b^2c^3 - b^3c^2*(-(4a*c - b^2)^3)^{(1/2)} - 10a*b^6c + 3a^2b*c^2*(-(4a*c - b^2)^3)^{(1/2)} + 2a*b*c^3*(-(4a*c - b^2)^3)^{(1/2)} - 4a*b^3c*(-(4a*c - b^2)^3)^{(1/2)))/(2*(a^6b^4 - a^4b^6 + 16a^6c^4 + 32a^7c^3 + 16a^8c^2 + 10a^5b^4c - 8a^7b^2c + a^4b^4c^2 - 8a^5b^2c^3 - 32a^6b^2c^2))^{(1/2)}*(8a^12c + 2a^6b^7 - 6a^7b^6 + 8a^8b^5 - 8a^9b^4 + 6a^10b^3 - 2a^11b^2 + 24a^8c^5 + 16a^9c^4 - 32a^10c^3 - 16a^11c^2 - 2a^6b^6c - 14a^7b^5c - 8a^8b^4c + 46a^8b^4c + 88a^9b^3c - 50a^9b^3c + 72a^10b^2c + 36a^10b^2c + 2a^6b^4c^3 - 2a^6b^5c^2 - 14a^7b^2c^4 + 10a^7b^3c^3 + 24a^7b^4c^2 - 68a^8b^2c^3 + 2a^8b^3c^2 - 80a^9b^2c^2 - 24a^11b^2c))/a^4)*(-(b^8 + 8a^3c^5 + 8a^4c^4 + b^5*(-(4a*c - b^2)^3))^{(1/2)} - b^6c^2 + 8a*b^4c^3 - 18a^2b^2c^4 + 33a^2b^4c^2 - 38a^3b^2c^3 - b^3c^2*(-(4a*c - b^2)^3)^{(1/2)} - 10a*b^6c + 3a^2b*c^2*(-(4a*c - b^2)^3)^{(1/2)} + 2a*b*c^3*(-(4a*c - b^2)^3)^{(1/2)} - 4a*b^3c*(-(4a*c - b^2)^3)^{(1/2)))/(2*(a^6b^4 - a^4b^6 + 16a^6c^4 + 32a^7c^3 + 16a^8c^2 + 10a^5b^4c - 8a^7b^2c + a^4b^4c^2 - 8a^5b^2c^3 - 32a^6b^2c^2))^{(1/2)} + (8192\tan(x/2)*(6a^3b^8 - 2a^2b^9 - 8a^4b^7 + 8a^5b^6 - 6a^6b^5 + 2a^7b^4 + 10a^5c^6 + 6a^6c^5 - 2a^7c^4 + 2a^8c^3 + 2a^2b^8c + 14a^3b^7c - 50a^4b^6c - 22a^5b^5c + 56a^5b^5c + 12a^6b^4c - 38a^6b^4c + 18a^7b^3c + 24a^7b^3c - 8a^8b^2c - 2a^2b^6c^3 + 2a^2b^7c^2 + 14a^3b^4c^4 - 10a^3b^5c^3 - 24a^3b^6c^2 - 27a^4b^2c^5 + 15a^4b^3c^4 + 59a^4b^4c^3 + 7a^4b^5c^2 + 11a^5b^2c^4 - 122a^5b^3c^3 + 93a^5b^4c^2 + 37a^6b^2c^3 - 99a^6b^3c^2 + 23a^7b^2c^2))/a^4)*(-(b^8 + 8a^3c^5 + 8a^4c^4 + b^5*(-(4a*c - b^2)^3))^{(1/2)} - b^6c^2 + 8a*b^4c^3 - 18a^2b^2c^4 + 33a^2b^4c^2 - 38a^3b^2c^3 - b^3c^2*(-(4a*c - b^2)^3)^{(1/2)} - 10a*b^6c + 3a^2b*c^2*(-(4a*c
\end{aligned}$$

$$\begin{aligned}
& c - b^2)^3)^{(1/2)} + 2*a*b*c^3*(-(4*a*c - b^2)^3)^{(1/2)} - 4*a*b^3*c*(-(4*a*c \\
& - b^2)^3)^{(1/2)})/(2*(a^6*b^4 - a^4*b^6 + 16*a^6*c^4 + 32*a^7*c^3 + 16*a^8* \\
& c^2 + 10*a^5*b^4*c - 8*a^7*b^2*c + a^4*b^4*c^2 - 8*a^5*b^2*c^3 - 32*a^6*b^2 \\
& *c^2)))^{(1/2)} + (8192*(6*a^2*b^8 - 3*a*b^9 - 4*a^3*b^7 + a^4*b^6 + 3*a^4*c^ \\
& 6 + 2*a^5*c^5 - a^6*c^4 + 2*a*b^5*c^4 - 5*a*b^6*c^3 + a*b^7*c^2 + 16*a^2*b^ \\
& 7*c + 8*a^3*b*c^6 - 38*a^3*b^6*c + 10*a^4*b*c^5 + 23*a^4*b^5*c + 6*a^5*b*c^ \\
& 4 - 5*a^5*b^4*c - 10*a^2*b^3*c^5 + 25*a^2*b^4*c^4 + 4*a^2*b^5*c^3 - 41*a^2* \\
& b^6*c^2 - 20*a^3*b^2*c^5 - 36*a^3*b^3*c^4 + 91*a^3*b^4*c^3 - 3*a^3*b^5*c^2 \\
& - 24*a^4*b^2*c^4 - 55*a^4*b^3*c^3 + 57*a^4*b^4*c^2 - 3*a^5*b^2*c^3 - 28*a^5 \\
& *b^3*c^2 + 4*a^6*b^2*c^2 + 5*a*b^8*c))/a^4)*(-(b^8 + 8*a^3*c^5 + 8*a^4*c^4 \\
& + b^5*(-(4*a*c - b^2)^3)^{(1/2)} - b^6*c^2 + 8*a*b^4*c^3 - 18*a^2*b^2*c^4 + 3 \\
& 3*a^2*b^4*c^2 - 38*a^3*b^2*c^3 - b^3*c^2*(-(4*a*c - b^2)^3)^{(1/2)} - 10*a*b^ \\
& 6*c + 3*a^2*b*c^2*(-(4*a*c - b^2)^3)^{(1/2)} + 2*a*b*c^3*(-(4*a*c - b^2)^3)^{( \\
& 1/2)} - 4*a*b^3*c*(-(4*a*c - b^2)^3)^{(1/2)})/(2*(a^6*b^4 - a^4*b^6 + 16*a^6*c \\
& ^4 + 32*a^7*c^3 + 16*a^8*c^2 + 10*a^5*b^4*c - 8*a^7*b^2*c + a^4*b^4*c^2 - 8 \\
& *a^5*b^2*c^3 - 32*a^6*b^2*c^2)))^{(1/2)} + (8192*\tan(x/2)*(a*b^8 + 5*b^8*c - \\
& b^9 + a^2*c^7 + a^3*c^6 + b^4*c^5 - 5*b^5*c^4 + 10*b^6*c^3 - 10*b^7*c^2 - 2 \\
& *a*b^2*c^6 + 14*a*b^3*c^5 - 35*a*b^4*c^4 + 40*a*b^5*c^3 - 20*a*b^6*c^2 - a^ \\
& 2*b*c^6 - 6*a^2*b^6*c + 10*a^2*b^2*c^5 - 20*a^2*b^3*c^4 + 5*a^2*b^4*c^3 + 1 \\
& 1*a^2*b^5*c^2 + 10*a^3*b^2*c^4 - 18*a^3*b^3*c^3 + 9*a^3*b^4*c^2 - 2*a^4*b^2 \\
& *c^3 + 2*a*b^7*c))/a^4)*(-(b^8 + 8*a^3*c^5 + 8*a^4*c^4 + b^5*(-(4*a*c - b^2 \\
& )^3)^{(1/2)} - b^6*c^2 + 8*a*b^4*c^3 - 18*a^2*b^2*c^4 + 33*a^2*b^4*c^2 - 38*a \\
& ^3*b^2*c^3 - b^3*c^2*(-(4*a*c - b^2)^3)^{(1/2)} - 10*a*b^6*c + 3*a^2*b*c^2*(- \\
& (4*a*c - b^2)^3)^{(1/2)} + 2*a*b*c^3*(-(4*a*c - b^2)^3)^{(1/2)} - 4*a*b^3*c*(- \\
& (4*a*c - b^2)^3)^{(1/2)})/(2*(a^6*b^4 - a^4*b^6 + 16*a^6*c^4 + 32*a^7*c^3 + 16 \\
& *a^8*c^2 + 10*a^5*b^4*c - 8*a^7*b^2*c + a^4*b^4*c^2 - 8*a^5*b^2*c^3 - 32*a^ \\
& 6*b^2*c^2)))^{(1/2)} + (16384*(b*c^7 - 4*b^2*c^6 + 6*b^3*c^5 - 4*b^4*c^4 + b^ \\
& 5*c^3 - 2*a*b^2*c^5 + 2*a*b^3*c^4 - a*b^4*c^3 + a^2*b^2*c^4 + a*b*c^6))/a^4 \\
& )*(-(b^8 + 8*a^3*c^5 + 8*a^4*c^4 + b^5*(-(4*a*c - b^2)^3)^{(1/2)} - b^6*c^2 \\
& + 8*a*b^4*c^3 - 18*a^2*b^2*c^4 + 33*a^2*b^4*c^2 - 38*a^3*b^2*c^3 - b^3*c^2* \\
& (- (4*a*c - b^2)^3)^{(1/2)} - 10*a*b^6*c + 3*a^2*b*c^2*(-(4*a*c - b^2)^3)^{(1/2)} \\
& ) + 2*a*b*c^3*(-(4*a*c - b^2)^3)^{(1/2)} - 4*a*b^3*c*(-(4*a*c - b^2)^3)^{(1/2)} \\
& )/(2*(a^6*b^4 - a^4*b^6 + 16*a^6*c^4 + 32*a^7*c^3 + 16*a^8*c^2 + 10*a^5*b^4 \\
& *c - 8*a^7*b^2*c + a^4*b^4*c^2 - 8*a^5*b^2*c^3 - 32*a^6*b^2*c^2)))^{(1/2)}*2i \\
& - (2*\tan(x/2))/(a*(\tan(x/2)^2 - 1))
\end{aligned}$$

## 3.20 $\int \frac{\sec^3(x)}{a+b \cos(x)+c \cos^2(x)} dx$

Optimal result	318
Rubi [A] (verified)	319
Mathematica [A] (verified)	321
Maple [A] (verified)	322
Fricas [F(-1)]	322
Sympy [F]	323
Maxima [F]	323
Giac [B] (verification not implemented)	324
Mupad [B] (verification not implemented)	330

### Optimal result

Integrand size = 19, antiderivative size = 334

$$\int \frac{\sec^3(x)}{a+b \cos(x)+c \cos^2(x)} dx$$

$$= -\frac{2c(b^3 - 3abc + \sqrt{b^2 - 4ac}(b^2 - ac)) \arctan\left(\frac{\sqrt{b-2c-\sqrt{b^2-4ac}} \tan\left(\frac{x}{2}\right)}{\sqrt{b+2c-\sqrt{b^2-4ac}}}\right)}{a^3 \sqrt{b^2 - 4ac} \sqrt{b - 2c - \sqrt{b^2 - 4ac}} \sqrt{b + 2c - \sqrt{b^2 - 4ac}}} + \frac{2c(b^3 - 3abc - \sqrt{b^2 - 4ac}(b^2 - ac)) \arctan\left(\frac{\sqrt{b-2c+\sqrt{b^2-4ac}} \tan\left(\frac{x}{2}\right)}{\sqrt{b+2c+\sqrt{b^2-4ac}}}\right)}{a^3 \sqrt{b^2 - 4ac} \sqrt{b - 2c + \sqrt{b^2 - 4ac}} \sqrt{b + 2c + \sqrt{b^2 - 4ac}}} + \frac{\operatorname{arctanh}(\sin(x))}{2a} + \frac{(b^2 - ac) \operatorname{arctanh}(\sin(x))}{a^3} - \frac{b \tan(x)}{a^2} + \frac{\sec(x) \tan(x)}{2a}$$

```
[Out] 1/2*arctanh(sin(x))/a+(-a*c+b^2)*arctanh(sin(x))/a^3-2*c*arctan((b-2*c-(-4*a*c+b^2)^(1/2))^(1/2)*tan(1/2*x)/(b+2*c-(-4*a*c+b^2)^(1/2))^(1/2))*(b^3-3*a*b*c+(-a*c+b^2)*(-4*a*c+b^2)^(1/2))/a^3/(-4*a*c+b^2)^(1/2)/(b-2*c-(-4*a*c+b^2)^(1/2))^(1/2)/(b+2*c-(-4*a*c+b^2)^(1/2))^(1/2)+2*c*arctan((b-2*c+(-4*a*c+b^2)^(1/2))^(1/2)*tan(1/2*x)/(b+2*c+(-4*a*c+b^2)^(1/2))^(1/2))*(b^3-3*a*b*c-(-a*c+b^2)*(-4*a*c+b^2)^(1/2))/a^3/(-4*a*c+b^2)^(1/2)/(b-2*c+(-4*a*c+b^2)^(1/2))^(1/2)/(b+2*c+(-4*a*c+b^2)^(1/2))^(1/2)-b*tan(x)/a^2+1/2*sec(x)*tan(x)/a
```

**Rubi [A] (verified)**

Time = 4.99 (sec) , antiderivative size = 334, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 8,  $\frac{\text{number of rules}}{\text{integrand size}} = 0.421$ , Rules used = {3338, 3374, 2738, 211, 3855, 3852, 8, 3853}

$$\int \frac{\sec^3(x)}{a + b \cos(x) + c \cos^2(x)} dx$$

$$= -\frac{2c(\sqrt{b^2 - 4ac}(b^2 - ac) - 3abc + b^3) \arctan\left(\frac{\tan(\frac{x}{2})\sqrt{-\sqrt{b^2 - 4ac} + b - 2c}}{\sqrt{-\sqrt{b^2 - 4ac} + b + 2c}}\right)}{a^3\sqrt{b^2 - 4ac}\sqrt{-\sqrt{b^2 - 4ac} + b - 2c}\sqrt{-\sqrt{b^2 - 4ac} + b + 2c}}$$

$$+ \frac{2c(-\sqrt{b^2 - 4ac}(b^2 - ac) - 3abc + b^3) \arctan\left(\frac{\tan(\frac{x}{2})\sqrt{\sqrt{b^2 - 4ac} + b - 2c}}{\sqrt{\sqrt{b^2 - 4ac} + b + 2c}}\right)}{a^3\sqrt{b^2 - 4ac}\sqrt{\sqrt{b^2 - 4ac} + b - 2c}\sqrt{\sqrt{b^2 - 4ac} + b + 2c}}$$

$$+ \frac{(b^2 - ac) \operatorname{arctanh}(\sin(x))}{a^3} - \frac{b \tan(x)}{a^2} + \frac{\operatorname{arctanh}(\sin(x))}{2a} + \frac{\tan(x) \sec(x)}{2a}$$

[In] Int[Sec[x]^3/(a + b\*Cos[x] + c\*Cos[x]^2), x]

[Out] (-2\*c\*(b^3 - 3\*a\*b\*c + Sqrt[b^2 - 4\*a\*c]\*(b^2 - a\*c))\*ArcTan[(Sqrt[b - 2\*c - Sqrt[b^2 - 4\*a\*c]]\*Tan[x/2])/Sqrt[b + 2\*c - Sqrt[b^2 - 4\*a\*c]]]/(a^3\*Sqrt[b^2 - 4\*a\*c]\*Sqrt[b - 2\*c - Sqrt[b^2 - 4\*a\*c]]\*Sqrt[b + 2\*c - Sqrt[b^2 - 4\*a\*c]]) + (2\*c\*(b^3 - 3\*a\*b\*c - Sqrt[b^2 - 4\*a\*c]\*(b^2 - a\*c))\*ArcTan[(Sqrt[b - 2\*c + Sqrt[b^2 - 4\*a\*c]]\*Tan[x/2])/Sqrt[b + 2\*c + Sqrt[b^2 - 4\*a\*c]]]/(a^3\*Sqrt[b^2 - 4\*a\*c]\*Sqrt[b - 2\*c + Sqrt[b^2 - 4\*a\*c]]\*Sqrt[b + 2\*c + Sqrt[b^2 - 4\*a\*c]]) + ArcTanh[Sin[x]]/(2\*a) + ((b^2 - a\*c)\*ArcTanh[Sin[x]])/a^3 - (b\*Tan[x])/a^2 + (Sec[x]\*Tan[x])/(2\*a)

Rule 8

Int[a\_, x\_Symbol] := Simp[a\*x, x] /; FreeQ[a, x]

Rule 211

Int[((a\_) + (b\_)\*(x\_)^2)^(-1), x\_Symbol] := Simp[(Rt[a/b, 2]/a)\*ArcTan[x/Rt[a/b, 2]], x] /; FreeQ[{a, b}, x] && PosQ[a/b]

Rule 2738

Int[((a\_) + (b\_)\*sin[Pi/2 + (c\_.) + (d\_)\*(x\_)])^(-1), x\_Symbol] := With[{e = FreeFactors[Tan[(c + d\*x)/2], x]}, Dist[2\*(e/d), Subst[Int[1/(a + b + (a - b)\*e^2\*x^2), x], x, Tan[(c + d\*x)/2]/e], x] /; FreeQ[{a, b, c, d}, x] && NeQ[a^2 - b^2, 0]

Rule 3338

```
Int[cos[(d_.) + (e_.)*(x_)]^(m_.)*((a_.) + cos[(d_.) + (e_.)*(x_)]^(n_.)*(b_.) + cos[(d_.) + (e_.)*(x_)]^(n2_.)*(c_.))^(p_), x_Symbol] := Int[ExpandTrig[cos[d + e*x]^m*(a + b*cos[d + e*x]^n + c*cos[d + e*x]^(2*n))^p, x], x] / ; FreeQ[{a, b, c, d, e}, x] && EqQ[n2, 2*n] && NeQ[b^2 - 4*a*c, 0] && IntegersQ[m, n, p]
```

#### Rule 3374

```
Int[(cos[(d_.) + (e_.)*(x_)]*(B_.) + (A_))/((a_.) + cos[(d_.) + (e_.)*(x_)]*(b_.) + cos[(d_.) + (e_.)*(x_)]^2*(c_.)), x_Symbol] := Module[{q = Rt[b^2 - 4*a*c, 2]}, Dist[B + (b*B - 2*A*c)/q, Int[1/(b + q + 2*c*Cos[d + e*x]), x], x] + Dist[B - (b*B - 2*A*c)/q, Int[1/(b - q + 2*c*Cos[d + e*x]), x], x] / ; FreeQ[{a, b, c, d, e, A, B}, x] && NeQ[b^2 - 4*a*c, 0]
```

#### Rule 3852

```
Int[csc[(c_.) + (d_.)*(x_)]^(n_), x_Symbol] := Dist[-d^(-1), Subst[Int[ExpandIntegrand[(1 + x^2)^(n/2 - 1), x], x], x, Cot[c + d*x]], x] / ; FreeQ[{c, d}, x] && IGtQ[n/2, 0]
```

#### Rule 3853

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

#### Rule 3855

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

#### Rubi steps

integral

$$= \int \left( \frac{-b^3 \left(1 - \frac{2ac}{b^2}\right) - b^2 c \left(1 - \frac{ac}{b^2}\right) \cos(x)}{a^3 (a + b \cos(x) + c \cos^2(x))} + \frac{(b^2 - ac) \sec(x)}{a^3} - \frac{b \sec^2(x)}{a^2} + \frac{\sec^3(x)}{a} \right) dx$$

$$= \frac{\int \frac{-b^3 \left(1 - \frac{2ac}{b^2}\right) - b^2 c \left(1 - \frac{ac}{b^2}\right) \cos(x)}{a + b \cos(x) + c \cos^2(x)} dx}{a^3} + \frac{\int \sec^3(x) dx}{a} - \frac{b \int \sec^2(x) dx}{a^2} + \frac{(b^2 - ac) \int \sec(x) dx}{a^3}$$



$$\begin{aligned}
&= \frac{(b^2 - ac) \operatorname{arctanh}(\sin(x))}{a^3} + \frac{\sec(x) \tan(x)}{2a} + \frac{\int \sec(x) dx}{2a} + \frac{b \operatorname{Subst}(\int 1 dx, x, -\tan(x))}{a^2} \\
&\quad + \frac{(c(b^3 - 3abc - \sqrt{b^2 - 4ac}(b^2 - ac))) \int \frac{1}{b + \sqrt{b^2 - 4ac} + 2c \cos(x)} dx}{a^3 \sqrt{b^2 - 4ac}} \\
&\quad - \frac{(c(b^3 - 3abc + \sqrt{b^2 - 4ac}(b^2 - ac))) \int \frac{1}{b - \sqrt{b^2 - 4ac} + 2c \cos(x)} dx}{a^3 \sqrt{b^2 - 4ac}} \\
&= \frac{\operatorname{arctanh}(\sin(x))}{2a} + \frac{(b^2 - ac) \operatorname{arctanh}(\sin(x))}{a^3} - \frac{b \tan(x)}{a^2} + \frac{\sec(x) \tan(x)}{2a} \\
&\quad + \frac{(2c(b^3 - 3abc - \sqrt{b^2 - 4ac}(b^2 - ac))) \operatorname{Subst}\left(\int \frac{1}{b + 2c + \sqrt{b^2 - 4ac} + (b - 2c + \sqrt{b^2 - 4ac})x^2} dx, x, \tan\left(\frac{x}{2}\right)\right)}{a^3 \sqrt{b^2 - 4ac}} \\
&\quad - \frac{(2c(b^3 - 3abc + \sqrt{b^2 - 4ac}(b^2 - ac))) \operatorname{Subst}\left(\int \frac{1}{b + 2c - \sqrt{b^2 - 4ac} + (b - 2c - \sqrt{b^2 - 4ac})x^2} dx, x, \tan\left(\frac{x}{2}\right)\right)}{a^3 \sqrt{b^2 - 4ac}} \\
&= -\frac{2c(b^3 - 3abc + \sqrt{b^2 - 4ac}(b^2 - ac)) \operatorname{arctan}\left(\frac{\sqrt{b - 2c - \sqrt{b^2 - 4ac}} \tan\left(\frac{x}{2}\right)}{\sqrt{b + 2c - \sqrt{b^2 - 4ac}}}\right)}{a^3 \sqrt{b^2 - 4ac} \sqrt{b - 2c - \sqrt{b^2 - 4ac}} \sqrt{b + 2c - \sqrt{b^2 - 4ac}}} \\
&\quad + \frac{2c(b^3 - 3abc - \sqrt{b^2 - 4ac}(b^2 - ac)) \operatorname{arctan}\left(\frac{\sqrt{b - 2c + \sqrt{b^2 - 4ac}} \tan\left(\frac{x}{2}\right)}{\sqrt{b + 2c + \sqrt{b^2 - 4ac}}}\right)}{a^3 \sqrt{b^2 - 4ac} \sqrt{b - 2c + \sqrt{b^2 - 4ac}} \sqrt{b + 2c + \sqrt{b^2 - 4ac}}} \\
&\quad + \frac{\operatorname{arctanh}(\sin(x))}{2a} + \frac{(b^2 - ac) \operatorname{arctanh}(\sin(x))}{a^3} - \frac{b \tan(x)}{a^2} + \frac{\sec(x) \tan(x)}{2a}
\end{aligned}$$

### Mathematica [A] (verified)

Time = 3.61 (sec) , antiderivative size = 446, normalized size of antiderivative = 1.34

$$\int \frac{\sec^3(x)}{a + b \cos(x) + c \cos^2(x)} dx = \frac{4\sqrt{2c}(b^3 - 3abc - b^2\sqrt{b^2 - 4ac} + ac\sqrt{b^2 - 4ac}) \operatorname{arctanh}\left(\frac{(b - 2c + \sqrt{b^2 - 4ac}) \tan\left(\frac{x}{2}\right)}{\sqrt{-2b^2 + 4c(a+c) - 2b\sqrt{b^2 - 4ac}}}\right)}{\sqrt{b^2 - 4ac} \sqrt{-b^2 + 2c(a+c) - b\sqrt{b^2 - 4ac}}} + \frac{4\sqrt{2c}(b^3 - 3abc + b^2\sqrt{b^2 - 4ac} - ac\sqrt{b^2 - 4ac}) \operatorname{arctanh}\left(\frac{(b - 2c - \sqrt{b^2 - 4ac}) \tan\left(\frac{x}{2}\right)}{\sqrt{-2b^2 + 4c(a+c) - 2b\sqrt{b^2 - 4ac}}}\right)}{\sqrt{b^2 - 4ac} \sqrt{-b^2 + 2c(a+c) + b\sqrt{b^2 - 4ac}}}$$

[In] Integrate[Sec[x]^3/(a + b\*Cos[x] + c\*Cos[x]^2), x]

[Out] -1/4\*((4\*sqrt(2)\*c\*(b^3 - 3\*a\*b\*c - b^2\*sqrt[b^2 - 4\*a\*c] + a\*c\*sqrt[b^2 - 4\*a\*c])\*ArcTanh[((b - 2\*c + sqrt[b^2 - 4\*a\*c])\*Tan[x/2])/sqrt[-2\*b^2 + 4\*c\*(a + c) - 2\*b\*sqrt[b^2 - 4\*a\*c]]])/(sqrt[b^2 - 4\*a\*c]\*sqrt[-b^2 + 2\*c\*(a + c) - b\*sqrt[b^2 - 4\*a\*c]]) + (4\*sqrt(2)\*c\*(b^3 - 3\*a\*b\*c + b^2\*sqrt[b^2 - 4\*a\*c] - a\*c\*sqrt[b^2 - 4\*a\*c])\*ArcTanh[((-b + 2\*c + sqrt[b^2 - 4\*a\*c])\*Tan[x/2])/sqrt[-2\*b^2 + 4\*c\*(a + c) + 2\*b\*sqrt[b^2 - 4\*a\*c]]])/(sqrt[b^2 - 4\*a\*c]\*sqrt[-b^2 + 2\*c\*(a + c) + b\*sqrt[b^2 - 4\*a\*c]]))

$$c] * \text{Sqrt}[-b^2 + 2*c*(a + c) + b*\text{Sqrt}[b^2 - 4*a*c]]) + 2*(a^2 + 2*b^2 - 2*a*c) * \text{Log}[\text{Cos}[x/2] - \text{Sin}[x/2]] - 2*(a^2 + 2*b^2 - 2*a*c) * \text{Log}[\text{Cos}[x/2] + \text{Sin}[x/2]] + (4*a*b*\text{Sin}[x/2]) / (\text{Cos}[x/2] - \text{Sin}[x/2]) + a^2 / (\text{Cos}[x/2] + \text{Sin}[x/2])^2 + (4*a*b*\text{Sin}[x/2]) / (\text{Cos}[x/2] + \text{Sin}[x/2]) + a^2 / (-1 + \text{Sin}[x]) / a^3$$

## Maple [A] (verified)

Time = 7.69 (sec) , antiderivative size = 481, normalized size of antiderivative = 1.44

method	result
default	$2(a-b+c) \left( \frac{(2cab\sqrt{-4ac+b^2} - a^2\sqrt{-4ac+b^2} - b^3\sqrt{-4ac+b^2} + b^2c\sqrt{-4ac+b^2} + 2a^2c^2 - 4ab^2c + 3abc^2 + b^4 - b^3c) \operatorname{arctanh}\left(\frac{(-a+b-c)\tan\left(\frac{x}{2}\right)}{\sqrt{(\sqrt{-4ac+b^2}-a+c)(a-b+c)}}\right)}{2\sqrt{-4ac+b^2}(a-b+c)\sqrt{(\sqrt{-4ac+b^2}-a+c)(a-b+c)}} \right)$
risch	Expression too large to display

[In] `int(sec(x)^3/(a+cos(x)*b+c*cos(x)^2),x,method=_RETURNVERBOSE)`

[Out]  $2/a^3*(a-b+c)*(1/2*(2*c*a*b*(-4*a*c+b^2)^(1/2)-a*c^2*(-4*a*c+b^2)^(1/2)-b^3*(-4*a*c+b^2)^(1/2)+b^2*c*(-4*a*c+b^2)^(1/2)+2*a^2*c^2-4*a*b^2*c+3*a*b*c^2+b^4-b^3*c)/(-4*a*c+b^2)^(1/2)/(a-b+c)/((( -4*a*c+b^2)^(1/2)-a+c)*(a-b+c))^(1/2)*\operatorname{arctanh}((-a+b-c)*\tan(1/2*x)/((( -4*a*c+b^2)^(1/2)-a+c)*(a-b+c))^(1/2))+1/2*(2*c*a*b*(-4*a*c+b^2)^(1/2)-a*c^2*(-4*a*c+b^2)^(1/2)-b^3*(-4*a*c+b^2)^(1/2)+b^2*c*(-4*a*c+b^2)^(1/2)-2*a^2*c^2+4*a*b^2*c-3*a*b*c^2-b^4+b^3*c)/(-4*a*c+b^2)^(1/2)/(a-b+c)/((( -4*a*c+b^2)^(1/2)+a-c)*(a-b+c))^(1/2)*\operatorname{arctan}((a-b+c)*\tan(1/2*x)/((( -4*a*c+b^2)^(1/2)+a-c)*(a-b+c))^(1/2))-1/2/a/(\tan(1/2*x)+1)^2-1/2*(-a-2*b)/a^2/(\tan(1/2*x)+1)+1/2*(a^2-2*a*c+2*b^2)/a^3*\ln(\tan(1/2*x)+1)+1/2/a/(\tan(1/2*x)-1)^2-1/2*(-a-2*b)/a^2/(\tan(1/2*x)-1)+1/2/a^3*(-a^2+2*a*c-2*b^2)*\ln(\tan(1/2*x)-1)$

## Fricas [F(-1)]

Timed out.

$$\int \frac{\sec^3(x)}{a + b \cos(x) + c \cos^2(x)} dx = \text{Timed out}$$

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

[Out] Timed out

## Sympy [F]

$$\int \frac{\sec^3(x)}{a + b \cos(x) + c \cos^2(x)} dx = \int \frac{\sec^3(x)}{a + b \cos(x) + c \cos^2(x)} dx$$

[In] integrate(sec(x)\*\*3/(a+b\*cos(x)+c\*cos(x)\*\*2), x)

[Out] Integral(sec(x)\*\*3/(a + b\*cos(x) + c\*cos(x)\*\*2), x)

## Maxima [F]

$$\int \frac{\sec^3(x)}{a + b \cos(x) + c \cos^2(x)} dx = \int \frac{\sec(x)^3}{c \cos(x)^2 + b \cos(x) + a} dx$$

[In] integrate(sec(x)^3/(a+b\*cos(x)+c\*cos(x)^2), x, algorithm="maxima")

[Out] 
$$\begin{aligned} & -1/4*(8*a^2*\cos(3*x)*\sin(2*x) + 8*a^2*\cos(2*x)*\sin(x) + 4*a^2*\sin(x) - 4*(a \\ & ^2*\sin(3*x) + 2*a*b*\sin(2*x) - a^2*\sin(x))*\cos(4*x) - 4*(a^3*\cos(4*x)^2 + 4 \\ & *a^3*\cos(2*x)^2 + a^3*\sin(4*x)^2 + 4*a^3*\sin(4*x)*\sin(2*x) + 4*a^3*\sin(2*x) \\ & ^2 + 4*a^3*\cos(2*x) + a^3 + 2*(2*a^3*\cos(2*x) + a^3)*\cos(4*x))*\text{integrate}(-2 \\ & *(b^3*c - a*b*c^2)*\cos(3*x)^2 + 4*(2*a*b^3 - 2*a*b*c^2 - (4*a^2*b - b^3) \\ & *c)*\cos(2*x)^2 + 2*(b^3*c - a*b*c^2)*\cos(x)^2 + 2*(b^3*c - a*b*c^2)*\sin(3*x) \\ & )^2 + 4*(2*a*b^3 - 2*a*b*c^2 - (4*a^2*b - b^3)*c)*\sin(2*x)^2 + 2*(2*b^4 - 2 \\ & *a*b^2*c - a*c^3 - (2*a^2 - b^2)*c^2)*\sin(2*x)*\sin(x) + 2*(b^3*c - a*b*c^2) \\ & *\sin(x)^2 + ((b^2*c^2 - a*c^3)*\cos(3*x) + 2*(b^3*c - 2*a*b*c^2)*\cos(2*x) + \\ & (b^2*c^2 - a*c^3)*\cos(x))*\cos(4*x) + (b^2*c^2 - a*c^3 + 2*(2*b^4 - 2*a*b^2* \\ & c - a*c^3 - (2*a^2 - b^2)*c^2)*\cos(2*x) + 4*(b^3*c - a*b*c^2)*\cos(x))*\cos(3 \\ & *x) + 2*(b^3*c - 2*a*b*c^2 + (2*b^4 - 2*a*b^2*c - a*c^3 - (2*a^2 - b^2)*c^2) \\ & )*\cos(x))*\cos(2*x) + (b^2*c^2 - a*c^3)*\cos(x) + ((b^2*c^2 - a*c^3)*\sin(3*x) \\ & + 2*(b^3*c - 2*a*b*c^2)*\sin(2*x) + (b^2*c^2 - a*c^3)*\sin(x))*\sin(4*x) + 2* \\ & ((2*b^4 - 2*a*b^2*c - a*c^3 - (2*a^2 - b^2)*c^2)*\sin(2*x) + 2*(b^3*c - a*b* \\ & c^2)*\sin(x))*\sin(3*x))/(a^3*c^2*\cos(4*x)^2 + 4*a^3*b^2*\cos(3*x)^2 + 4*a^3*b \\ & ^2*\cos(x)^2 + a^3*c^2*\sin(4*x)^2 + 4*a^3*b^2*\sin(3*x)^2 + 4*a^3*b^2*\sin(x)^ \\ & 2 + 4*a^3*b*c*\cos(x) + a^3*c^2 + 4*(4*a^5 + 4*a^4*c + a^3*c^2)*\cos(2*x)^2 + \\ & 4*(4*a^5 + 4*a^4*c + a^3*c^2)*\sin(2*x)^2 + 8*(2*a^4*b + a^3*b*c)*\sin(2*x)* \\ & \sin(x) + 2*(2*a^3*b*c*\cos(3*x) + 2*a^3*b*c*\cos(x) + a^3*c^2 + 2*(2*a^4*c + \\ & a^3*c^2)*\cos(2*x))*\cos(4*x) + 4*(2*a^3*b^2*\cos(x) + a^3*b*c + 2*(2*a^4*b + \\ & a^3*b*c)*\cos(2*x))*\cos(3*x) + 4*(2*a^4*c + a^3*c^2 + 2*(2*a^4*b + a^3*b*c)* \\ & \cos(x))*\cos(2*x) + 4*(a^3*b*c*\sin(3*x) + a^3*b*c*\sin(x) + (2*a^4*c + a^3*c^ \\ & 2)*\sin(2*x))*\sin(4*x) + 8*(a^3*b^2*\sin(x) + (2*a^4*b + a^3*b*c)*\sin(2*x))*\sin(3*x), x) \\ & - ((a^2 + 2*b^2 - 2*a*c)*\cos(4*x)^2 + 4*(a^2 + 2*b^2 - 2*a*c)* \\ & \cos(2*x)^2 + (a^2 + 2*b^2 - 2*a*c)*\sin(4*x)^2 + 4*(a^2 + 2*b^2 - 2*a*c)*\sin( \\ & 4*x)*\sin(2*x) + 4*(a^2 + 2*b^2 - 2*a*c)*\sin(2*x)^2 + a^2 + 2*b^2 - 2*a*c + \end{aligned}$$

$$2*(a^2 + 2*b^2 - 2*a*c + 2*(a^2 + 2*b^2 - 2*a*c)*\cos(2*x))*\cos(4*x) + 4*(a^2 + 2*b^2 - 2*a*c)*\cos(2*x))*\log(\cos(x)^2 + \sin(x)^2 + 2*\sin(x) + 1) + ((a^2 + 2*b^2 - 2*a*c)*\cos(4*x)^2 + 4*(a^2 + 2*b^2 - 2*a*c)*\cos(2*x)^2 + (a^2 + 2*b^2 - 2*a*c)*\sin(4*x)^2 + 4*(a^2 + 2*b^2 - 2*a*c)*\sin(4*x)*\sin(2*x) + 4*(a^2 + 2*b^2 - 2*a*c)*\sin(2*x)^2 + a^2 + 2*b^2 - 2*a*c + 2*(a^2 + 2*b^2 - 2*a*c + 2*(a^2 + 2*b^2 - 2*a*c)*\cos(2*x))*\cos(4*x) + 4*(a^2 + 2*b^2 - 2*a*c)*\cos(2*x))*\log(\cos(x)^2 + \sin(x)^2 - 2*\sin(x) + 1) + 4*(a^2*\cos(3*x) + 2*a*b*\cos(2*x) - a^2*\cos(x) + 2*a*b)*\sin(4*x) - 4*(2*a^2*\cos(2*x) + a^2)*\sin(3*x) - 8*(a^2*\cos(x) - a*b)*\sin(2*x))/(a^3*\cos(4*x)^2 + 4*a^3*\cos(2*x)^2 + a^3*\sin(4*x)^2 + 4*a^3*\sin(4*x)*\sin(2*x) + 4*a^3*\sin(2*x)^2 + 4*a^3*\cos(2*x) + a^3 + 2*(2*a^3*\cos(2*x) + a^3)*\cos(4*x))$$

### Giac [B] (verification not implemented)

Leaf count of result is larger than twice the leaf count of optimal. 12615 vs. 2(286) = 572.

Time = 2.84 (sec) , antiderivative size = 12615, normalized size of antiderivative = 37.77

$$\int \frac{\sec^3(x)}{a + b \cos(x) + c \cos^2(x)} dx = \text{Too large to display}$$

[In] integrate(sec(x)^3/(a+b\*cos(x)+c\*cos(x)^2),x, algorithm="giac")

[Out] ((2\*a^2\*b^7 - 4\*a\*b^8 + 2\*b^9 - 20\*a^3\*b^5\*c + 38\*a^2\*b^6\*c - 12\*a\*b^7\*c - 6\*b^8\*c + 64\*a^4\*b^3\*c^2 - 110\*a^3\*b^4\*c^2 - 12\*a^2\*b^5\*c^2 + 54\*a\*b^6\*c^2 + 6\*b^7\*c^2 - 64\*a^5\*b\*c^3 + 80\*a^4\*b^2\*c^3 + 160\*a^3\*b^3\*c^3 - 140\*a^2\*b^4\*c^3 - 56\*a\*b^5\*c^3 - 2\*b^6\*c^3 + 32\*a^5\*c^4 - 192\*a^4\*b\*c^4 + 64\*a^3\*b^2\*c^4 + 160\*a^2\*b^3\*c^4 + 18\*a\*b^4\*c^4 + 64\*a^4\*c^5 - 128\*a^3\*b\*c^5 - 48\*a^2\*b^2\*c^5 + 32\*a^3\*c^6 + 3\*sqrt(a^2 - a\*b + b\*c - c^2 + sqrt(b^2 - 4\*a\*c))\*(a - b + c))\*sqrt(b^2 - 4\*a\*c)\*a^2\*b^5 - 2\*(b^2 - 4\*a\*c)\*a^2\*b^5 - 2\*sqrt(a^2 - a\*b + b\*c - c^2 + sqrt(b^2 - 4\*a\*c))\*(a - b + c))\*sqrt(b^2 - 4\*a\*c)\*a\*b^6 + 4\*(b^2 - 4\*a\*c)\*a\*b^6 - 5\*sqrt(a^2 - a\*b + b\*c - c^2 + sqrt(b^2 - 4\*a\*c))\*(a - b + c))\*sqrt(b^2 - 4\*a\*c)\*b^7 - 2\*(b^2 - 4\*a\*c)\*b^7 - 18\*sqrt(a^2 - a\*b + b\*c - c^2 + sqrt(b^2 - 4\*a\*c))\*(a - b + c))\*sqrt(b^2 - 4\*a\*c)\*a^3\*b^3\*c + 12\*(b^2 - 4\*a\*c)\*a^3\*b^3\*c + 9\*sqrt(a^2 - a\*b + b\*c - c^2 + sqrt(b^2 - 4\*a\*c))\*(a - b + c))\*sqrt(b^2 - 4\*a\*c)\*a^2\*b^4\*c - 22\*(b^2 - 4\*a\*c)\*a^2\*b^4\*c + 46\*sqrt(a^2 - a\*b + b\*c - c^2 + sqrt(b^2 - 4\*a\*c))\*(a - b + c))\*sqrt(b^2 - 4\*a\*c)\*a\*b^5\*c + 4\*(b^2 - 4\*a\*c)\*a\*b^5\*c + 11\*sqrt(a^2 - a\*b + b\*c - c^2 + sqrt(b^2 - 4\*a\*c))\*(a - b + c))\*sqrt(b^2 - 4\*a\*c)\*b^6\*c + 6\*(b^2 - 4\*a\*c)\*b^6\*c + 24\*sqrt(a^2 - a\*b + b\*c - c^2 + sqrt(b^2 - 4\*a\*c))\*(a - b + c))\*sqrt(b^2 - 4\*a\*c)\*a^4\*b\*c^2 - 16\*(b^2 - 4\*a\*c)\*a^4\*b\*c^2 - sqrt(a^2 - a\*b + b\*c - c^2 + sqrt(b^2 - 4\*a\*c))\*(a - b + c))\*sqrt(b^2 - 4\*a\*c)\*a^3\*b^2\*c^2 + 22\*(b^2 - 4\*a\*c)\*a^3\*b^2\*c^2 - 134\*sqrt(a^2 - a\*b + b\*c - c^2 + sqrt(b^2 - 4\*a\*c))\*(a - b + c))\*sqrt(b^2 - 4\*a\*c)\*a^2\*b^3\*c^2 + 28\*(b^2 - 4\*a\*c)\*a^2\*b^3\*c^2 - 75\*sqrt(a^2 - a\*b + b\*c - c^2 + sqrt(b^2 - 4\*a\*c))\*(a - b + c))\*sqrt(b^2 - 4\*a\*c)\*a\*b^4\*c^2 - 30\*(b^2 - 4\*a\*c)\*a\*b^4\*c^2 - 11\*sqrt(a^2 - a\*b + b\*c -

$$\begin{aligned}
& c^2 + \sqrt{b^2 - 4ac}(a - b + c) \sqrt{b^2 - 4ac} b^5 c^2 - 6(b^2 - 4ac) b^5 c^2 - 12 \sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c) \sqrt{b^2 - 4ac} a^4 c^3 + 8(b^2 - 4ac) a^4 c^3 + 120 \sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c) \sqrt{b^2 - 4ac} a^3 b c^3 - 48(b^2 - 4ac) a^3 b c^3 + 138 \sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c) \sqrt{b^2 - 4ac} a^2 b^2 c^3 + 20(b^2 - 4ac) a^2 b^2 c^3 + 60 \sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c) \sqrt{b^2 - 4ac} a b^3 c^3 + 32(b^2 - 4ac) a b^3 c^3 + 5 \sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c) \sqrt{b^2 - 4ac} b^4 c^3 + 2(b^2 - 4ac) b^4 c^3 - 56 \sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c) \sqrt{b^2 - 4ac} a^3 c^4 + 16(b^2 - 4ac) a^3 c^4 - 64 \sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c) \sqrt{b^2 - 4ac} a^2 b c^4 - 32(b^2 - 4ac) a^2 b c^4 - 25 \sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c) \sqrt{b^2 - 4ac} a b^2 c^4 - 10(b^2 - 4ac) a b^2 c^4 + 20 \sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c) \sqrt{b^2 - 4ac} a^2 c^5 + 8(b^2 - 4ac) a^2 c^5 a^2 \operatorname{abs}(a - b + c) - (4a^3 b^7 - 8a^2 b^8 + 4a b^9 - 40a^4 b^5 c + 84a^3 b^6 c - 40a^2 b^7 c - 4a b^8 c + 128a^5 b^3 c^2 - 292a^4 b^4 c^2 + 120a^3 b^5 c^2 + 52a^2 b^6 c^2 - 4a b^7 c^2 - 128a^6 b c^3 + 352a^5 b^2 c^3 - 64a^4 b^3 c^3 - 232a^3 b^4 c^3 + 32a^2 b^5 c^3 + 4a b^6 c^3 - 64a^6 c^4 - 128a^5 b c^4 + 384a^4 b^2 c^4 - 64a^3 b^3 c^4 - 36a^2 b^4 c^4 - 128a^5 c^5 + 96a^3 b^2 c^5 - 64a^4 c^6 + 3 \sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c) a^4 b^5 - 5 \sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c) a^3 b^6 - 3 \sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c) a^2 b^7 + 5 \sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c) a b^8 - 18 \sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c) a^5 b^3 c + 33 \sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c) a^4 b^4 c + 30 \sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c) a^3 b^5 c - 43 \sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c) a^2 b^6 c - 6 \sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c) a b^7 c + 24 \sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c) a^6 b c^2 - 55 \sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c) a^5 b^2 c^2 - 101 \sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c) a^4 b^3 c^2 + 132 \sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c) a^3 b^4 c^2 + 40 \sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c) a^2 b^5 c^2 + 12 \sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c) a^6 c^3 + 116 \sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c) a^5 b c^3 - 177 \sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c) a^4 b^2 c^3 - 72 \sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c) a^3 b^3 c^3 - 2 \sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c) a^2 b^4 c^3 + 6 \sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c) a b^5 c^3 + 68 \sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c) a^5 c^4 + 32 \sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c) a^4 b c^4 - \sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c) a^3 b^2 c^4 - 25 \sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b +
\end{aligned}$$

$$\begin{aligned}
& c)) * a^2 * b^3 * c^4 - 5 * \sqrt{a^2 - a * b + b * c - c^2 + \sqrt{b^2 - 4 * a * c}} * (a - b \\
& + c)) * a * b^4 * c^4 + 36 * \sqrt{a^2 - a * b + b * c - c^2 + \sqrt{b^2 - 4 * a * c}} * (a - b \\
& + c)) * a^4 * c^5 + 4 * \sqrt{a^2 - a * b + b * c - c^2 + \sqrt{b^2 - 4 * a * c}} * (a - b + c \\
& )) * a^3 * b * c^5 + 25 * \sqrt{a^2 - a * b + b * c - c^2 + \sqrt{b^2 - 4 * a * c}} * (a - b + c \\
& )) * a^2 * b^2 * c^5 - 20 * \sqrt{a^2 - a * b + b * c - c^2 + \sqrt{b^2 - 4 * a * c}} * (a - b + \\
& c)) * a^3 * c^6 - 4 * (b^2 - 4 * a * c) * a^3 * b^5 + 8 * (b^2 - 4 * a * c) * a^2 * b^6 - 4 * (b^2 - \\
& 4 * a * c) * a * b^7 + 24 * (b^2 - 4 * a * c) * a^4 * b^3 * c - 52 * (b^2 - 4 * a * c) * a^3 * b^4 * c + 2 \\
& 4 * (b^2 - 4 * a * c) * a^2 * b^5 * c + 4 * (b^2 - 4 * a * c) * a * b^6 * c - 32 * (b^2 - 4 * a * c) * a^5 * \\
& b * c^2 + 84 * (b^2 - 4 * a * c) * a^4 * b^2 * c^2 - 24 * (b^2 - 4 * a * c) * a^3 * b^3 * c^2 - 36 * (b \\
& ^2 - 4 * a * c) * a^2 * b^4 * c^2 + 4 * (b^2 - 4 * a * c) * a * b^5 * c^2 - 16 * (b^2 - 4 * a * c) * a^5 * \\
& c^3 - 32 * (b^2 - 4 * a * c) * a^4 * b * c^3 + 88 * (b^2 - 4 * a * c) * a^3 * b^2 * c^3 - 16 * (b^2 - \\
& 4 * a * c) * a^2 * b^3 * c^3 - 4 * (b^2 - 4 * a * c) * a * b^4 * c^3 - 32 * (b^2 - 4 * a * c) * a^4 * c^4 \\
& + 20 * (b^2 - 4 * a * c) * a^2 * b^2 * c^4 - 16 * (b^2 - 4 * a * c) * a^3 * c^5) * \text{abs}(a - b + c) * a \\
& \text{bs}(a) - (2 * a^5 * b^6 - 4 * a^4 * b^7 + 2 * a^3 * b^8 - 16 * a^6 * b^4 * c + 30 * a^5 * b^5 * c - \\
& 10 * a^4 * b^6 * c - 2 * a^3 * b^7 * c - 2 * a^2 * b^8 * c + 36 * a^7 * b^2 * c^2 - 58 * a^6 * b^3 * c^2 \\
& - 8 * a^5 * b^4 * c^2 + 12 * a^4 * b^5 * c^2 + 14 * a^3 * b^6 * c^2 + 6 * a^2 * b^7 * c^2 - 16 * a^8 * \\
& c^3 + 8 * a^7 * b * c^3 + 68 * a^6 * b^2 * c^3 - 10 * a^5 * b^3 * c^3 - 20 * a^4 * b^4 * c^3 - 44 * a \\
& ^3 * b^5 * c^3 - 6 * a^2 * b^6 * c^3 - 16 * a^7 * c^4 - 24 * a^6 * b * c^4 - 20 * a^5 * b^2 * c^4 + 8 \\
& 2 * a^4 * b^3 * c^4 + 44 * a^3 * b^4 * c^4 + 2 * a^2 * b^5 * c^4 + 16 * a^6 * c^5 - 8 * a^5 * b * c^5 - \\
& 84 * a^4 * b^2 * c^5 - 14 * a^3 * b^3 * c^5 + 16 * a^5 * c^6 + 24 * a^4 * b * c^6 + 3 * \sqrt{a^2 - \\
& a * b + b * c - c^2 + \sqrt{b^2 - 4 * a * c}} * (a - b + c)) * \sqrt{b^2 - 4 * a * c} * a^5 * b^4 \\
& - 2 * (b^2 - 4 * a * c) * a^5 * b^4 - 2 * \sqrt{a^2 - a * b + b * c - c^2 + \sqrt{b^2 - 4 * a * \\
& c}} * (a - b + c)) * \sqrt{b^2 - 4 * a * c} * a^4 * b^5 + 4 * (b^2 - 4 * a * c) * a^4 * b^5 - 5 * \sqrt{a^2 - a * b + b * c - c^2 + \sqrt{b^2 - 4 * a * c}} * (a - b + c)) * \sqrt{b^2 - 4 * a * c} * a^3 * b^6 - 2 * (b^2 - 4 * a * c) * a^3 * b^6 - 12 * \sqrt{a^2 - a * b + b * c - c^2 + \sqrt{b^2 - 4 * a * c}} * (a - b + c)) * \sqrt{b^2 - 4 * a * c} * a^6 * b^2 * c + 8 * (b^2 - 4 * a * c) * a^6 * b^2 * c + 5 * \sqrt{a^2 - a * b + b * c - c^2 + \sqrt{b^2 - 4 * a * c}} * (a - b + c)) * \sqrt{b^2 - 4 * a * c} * a^5 * b^3 * c - 14 * (b^2 - 4 * a * c) * a^5 * b^3 * c + 33 * \sqrt{a^2 - a * b + b * c - c^2 + \sqrt{b^2 - 4 * a * c}} * (a - b + c)) * \sqrt{b^2 - 4 * a * c} * a^4 * b^4 * c + 2 * (b^2 - 4 * a * c) * a^4 * b^4 * c + 13 * \sqrt{a^2 - a * b + b * c - c^2 + \sqrt{b^2 - 4 * a * c}} * (a - b + c)) * \sqrt{b^2 - 4 * a * c} * a^3 * b^5 * c + 2 * (b^2 - 4 * a * c) * a^3 * b^5 * c + 5 * \sqrt{a^2 - a * b + b * c - c^2 + \sqrt{b^2 - 4 * a * c}} * (a - b + c)) * \sqrt{b^2 - 4 * a * c} * a^2 * b^6 * c + 2 * (b^2 - 4 * a * c) * a^2 * b^6 * c + 6 * \sqrt{a^2 - a * b + b * c - c^2 + \sqrt{b^2 - 4 * a * c}} * (a - b + c)) * \sqrt{b^2 - 4 * a * c} * a^7 * c^2 - 4 * (b^2 - 4 * a * c) * a^7 * c^2 + 5 * \sqrt{a^2 - a * b + b * c - c^2 + \sqrt{b^2 - 4 * a * c}} * (a - b + c)) * \sqrt{b^2 - 4 * a * c} * a^6 * b * c^2 + 2 * (b^2 - 4 * a * c) * a^6 * b * c^2 - 60 * \sqrt{a^2 - a * b + b * c - c^2 + \sqrt{b^2 - 4 * a * c}} * (a - b + c)) * \sqrt{b^2 - 4 * a * c} * a^5 * b^2 * c^2 + 16 * (b^2 - 4 * a * c) * a^5 * b^2 * c^2 - 58 * \sqrt{a^2 - a * b + b * c - c^2 + \sqrt{b^2 - 4 * a * c}} * (a - b + c)) * \sqrt{b^2 - 4 * a * c} * a^4 * b^3 * c^2 - 4 * (b^2 - 4 * a * c) * a^4 * b^3 * c^2 - 47 * \sqrt{a^2 - a * b + b * c - c^2 + \sqrt{b^2 - 4 * a * c}} * (a - b + c)) * \sqrt{b^2 - 4 * a * c} * a^3 * b^4 * c^2 - 6 * (b^2 - 4 * a * c) * a^3 * b^4 * c^2 - 11 * \sqrt{a^2 - a * b + b * c - c^2 + \sqrt{b^2 - 4 * a * c}} * (a - b + c)) * \sqrt{b^2 - 4 * a * c} * a^2 * b^5 * c^2 - 6 * (b^2 - 4 * a * c) * a^2 * b^5 * c^2 + 22 * \sqrt{a^2 - a * b + b * c - c^2 + \sqrt{b^2 - 4 * a * c}} * (a - b + c)) * \sqrt{b^2 - 4 * a * c} * a^6 * c^3 - 4 * (b^2 - 4 * a * c) * a^6 * c^3 + 49 * \sqrt{a^2 - a * b + b * c - c^2 + \sqrt{b^2 - 4 * a * c}} * (a - b + c)) * \sqrt{b^2 - 4 * a * c} *
\end{aligned}$$

$$\begin{aligned}
& a^5 b^3 c^3 - 6(b^2 - 4ac)a^5 b^3 c^3 + 110\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c)\sqrt{b^2 - 4ac}a^4 b^2 c^3 - 4(b^2 - 4ac) \\
& a^4 b^2 c^3 + 58\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c)\sqrt{b^2 - 4ac}a^3 b^3 c^3 + 20(b^2 - 4ac)a^3 b^3 c^3 + 11\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c) \\
& \sqrt{b^2 - 4ac}a^2 b^4 c^3 + 6(b^2 - 4ac)a^2 b^4 c^3 - 38\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c)\sqrt{b^2 - 4ac}a^5 c^4 + 4(b^2 - 4ac)a^5 c^4 \\
& - 69\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c)\sqrt{b^2 - 4ac}a^4 b^2 c^4 - 2(b^2 - 4ac)a^4 b^2 c^4 - 38\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c) \\
& \sqrt{b^2 - 4ac}a^3 b^2 c^4 - 20(b^2 - 4ac)a^3 b^2 c^4 - 5\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c)\sqrt{b^2 - 4ac}a^2 b^3 c^4 - 2(b^2 - 4ac)a^2 b^3 c^4 \\
& + 10\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c)\sqrt{b^2 - 4ac}a^4 c^5 + 4(b^2 - 4ac)a^4 c^5 + 15\sqrt{a^2 - ab + bc - c^2 + \sqrt{b^2 - 4ac}}(a - b + c) \\
& \sqrt{b^2 - 4ac}a^3 b^2 c^5 + 6(b^2 - 4ac)a^3 b^2 c^5) \cdot \text{abs}(a - b + c) \cdot (\text{pi} \cdot \text{floor}(1/2 \cdot x/\text{pi} + 1/2) + \arctan(2 \cdot \sqrt{1/2} \cdot \tan(1/2 \cdot x) / \sqrt{(2a^4 - 2a^3 c + \sqrt{-4(a^4 + a^3 b + a^3 c)(a^4 - a^3 b + a^3 c)} + 4(a^4 - a^3 c)^2}) / (a^4 - a^3 b + a^3 c)))) / ((3a^{10} b^2 - 8a^9 b^3 - a^8 b^4 + 16a^7 b^5 - 7a^6 b^6 - 8a^5 b^7 + 5a^4 b^8 - 12a^{11} c + 32a^{10} b^2 c + 30a^9 b^2 c - 112a^8 b^3 c + 8a^7 b^4 c + 96a^6 b^5 c - 26a^5 b^6 c - 16a^4 b^7 c - 104a^{10} c^2 + 192a^9 b^2 c^2 + 149a^8 b^2 c^2 - 336a^7 b^3 c^2 - 30a^6 b^4 c^2 + 112a^5 b^5 c^2 + 17a^4 b^6 c^2 - 276a^9 c^3 + 320a^8 b^2 c^3 + 292a^7 b^2 c^3 - 224a^6 b^3 c^3 - 120a^5 b^4 c^3 - 304a^8 c^4 + 128a^7 b^2 c^4 + 237a^6 b^2 c^4 + 24a^5 b^3 c^4 - 17a^4 b^4 c^4 - 116a^7 c^5 - 96a^6 b^2 c^5 + 62a^5 b^2 c^5 + 16a^4 b^3 c^5 + 24a^6 c^6 - 64a^5 b^2 c^6 - 5a^4 b^2 c^6 + 20a^5 c^7) \cdot \text{abs}(a)) - ((2a^2 b^7 - 4a^2 b^8 + 2b^9 - 20a^3 b^5 c + 38a^2 b^6 c - 12a^2 b^7 c - 6b^8 c + 64a^4 b^3 c^2 - 110a^3 b^4 c^2 - 12a^2 b^5 c^2 + 54a^2 b^6 c^2 + 6b^7 c^2 - 64a^5 b^2 c^3 + 80a^4 b^2 c^3 + 160a^3 b^3 c^3 - 140a^2 b^4 c^3 - 56a^2 b^5 c^3 - 2b^6 c^3 + 32a^5 c^4 - 192a^4 b^2 c^4 + 64a^3 b^2 c^4 + 160a^2 b^3 c^4 + 18a^2 b^4 c^4 + 64a^4 c^5 - 128a^3 b^2 c^5 - 48a^2 b^2 c^5 + 32a^3 c^6 + 3\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c)\sqrt{b^2 - 4ac}a^2 b^5 - 2(b^2 - 4ac)a^2 b^5 - 2\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c)\sqrt{b^2 - 4ac}a^2 b^6 + 4(b^2 - 4ac)a^2 b^6 - 5\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c)\sqrt{b^2 - 4ac}a^3 b^3 c + 12(b^2 - 4ac)a^3 b^3 c + 9\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c)\sqrt{b^2 - 4ac}a^2 b^4 c - 22(b^2 - 4ac)a^2 b^4 c + 46\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c)\sqrt{b^2 - 4ac}a^2 b^5 c + 4(b^2 - 4ac)a^2 b^5 c + 11\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c)\sqrt{b^2 - 4ac}b^6 c + 6(b^2 - 4ac)c)b^6 c + 24\sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c)\sqrt{b^2 - 4ac}a^4 b^2 c^2 - 16(b^2 - 4ac)a^4 b^2 c^2 - \sqrt{a^2 - ab + bc - c^2 - \sqrt{b^2 - 4ac}}(a - b + c)\sqrt{b^2 - 4ac}a^3 b^2 c^2 +
\end{aligned}$$

$$\begin{aligned}
& 22*(b^2 - 4*a*c)*a^3*b^2*c^2 - 134*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c)*\sqrt{b^2 - 4*a*c}*a^2*b^3*c^2 + 28*(b^2 - 4*a*c)*a^2*b^3*c^2 - 75*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c)*\sqrt{b^2 - 4*a*c}*a*b^4*c^2 - 30*(b^2 - 4*a*c)*a*b^4*c^2 - 11*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c)*\sqrt{b^2 - 4*a*c}*b^5*c^2 - 6*(b^2 - 4*a*c)*b^5*c^2 - 12*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c)*\sqrt{b^2 - 4*a*c}*a^4*c^3 + 8*(b^2 - 4*a*c)*a^4*c^3 + 120*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c)*\sqrt{b^2 - 4*a*c}*a^3*b*c^3 - 48*(b^2 - 4*a*c)*a^3*b*c^3 + 138*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c)*\sqrt{b^2 - 4*a*c}*a^2*b^2*c^3 + 20*(b^2 - 4*a*c)*a^2*b^2*c^3 + 60*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c)*\sqrt{b^2 - 4*a*c}*a*b^3*c^3 + 32*(b^2 - 4*a*c)*a*b^3*c^3 + 5*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c)*\sqrt{b^2 - 4*a*c}*b^4*c^3 + 2*(b^2 - 4*a*c)*b^4*c^3 - 56*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c)*\sqrt{b^2 - 4*a*c}*a^3*c^4 + 16*(b^2 - 4*a*c)*a^3*c^4 - 64*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c)*\sqrt{b^2 - 4*a*c}*a^2*b*c^4 - 32*(b^2 - 4*a*c)*a^2*b*c^4 - 25*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c)*\sqrt{b^2 - 4*a*c}*a*b^2*c^4 - 10*(b^2 - 4*a*c)*a*b^2*c^4 + 20*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c)*\sqrt{b^2 - 4*a*c}*a^2*c^5 + 8*(b^2 - 4*a*c)*a^2*c^5)*a^2*abs(a - b + c) - (4*a^3*b^7 - 8*a^2*b^8 + 4*a*b^9 - 40*a^4*b^5*c + 84*a^3*b^6*c - 40*a^2*b^7*c - 4*a*b^8*c + 128*a^5*b^3*c^2 - 292*a^4*b^4*c^2 + 120*a^3*b^5*c^2 + 52*a^2*b^6*c^2 - 4*a*b^7*c^2 - 128*a^6*b*c^3 + 352*a^5*b^2*c^3 - 64*a^4*b^3*c^3 - 232*a^3*b^4*c^3 + 32*a^2*b^5*c^3 + 4*a*b^6*c^3 - 64*a^6*c^4 - 128*a^5*b*c^4 + 384*a^4*b^2*c^4 - 64*a^3*b^3*c^4 - 36*a^2*b^4*c^4 - 128*a^5*c^5 + 96*a^3*b^2*c^5 - 64*a^4*c^6 - 3*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c))*a^4*b^5 + 5*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c))*a^3*b^6 + 3*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c))*a^2*b^7 - 5*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c))*a*b^8 + 18*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c))*a^5*b^3*c - 33*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c))*a^4*b^4*c - 30*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c))*a^3*b^5*c + 43*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c))*a^2*b^6*c + 6*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c))*a*b^7*c - 24*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c))*a^6*b*c^2 + 55*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c))*a^5*b^2*c^2 + 101*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c))*a^4*b^3*c^2 - 132*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c))*a^3*b^4*c^2 - 40*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c))*a^2*b^5*c^2 - 12*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c))*a^6*c^3 - 116*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c))*a^5*b*c^3 + 177*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c))*a^4*b^2*c^3 + 72*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c))*a^3*b^3*c^3 + 2*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*(a - b + c))*a^2*b^4*c^3 - 6*\sqrt{a^2 - a*b + b*c - c^2 - \sqrt{b^2 - 4*a*c}}*
\end{aligned}$$



$$\begin{aligned}
& (a - b + c)) * a * b^5 * c^3 - 68 * \sqrt{a^2 - a * b + b * c - c^2 - \sqrt{b^2 - 4 * a * c}} * \\
& (a - b + c)) * a^5 * c^4 - 32 * \sqrt{a^2 - a * b + b * c - c^2 - \sqrt{b^2 - 4 * a * c}} * (a \\
& - b + c)) * a^4 * b * c^4 + \sqrt{a^2 - a * b + b * c - c^2 - \sqrt{b^2 - 4 * a * c}} * (a - \\
& b + c)) * a^3 * b^2 * c^4 + 25 * \sqrt{a^2 - a * b + b * c - c^2 - \sqrt{b^2 - 4 * a * c}} * (a \\
& - b + c)) * a^2 * b^3 * c^4 + 5 * \sqrt{a^2 - a * b + b * c - c^2 - \sqrt{b^2 - 4 * a * c}} * (a \\
& - b + c)) * a * b^4 * c^4 - 36 * \sqrt{a^2 - a * b + b * c - c^2 - \sqrt{b^2 - 4 * a * c}} * (a \\
& - b + c)) * a^4 * c^5 - 4 * \sqrt{a^2 - a * b + b * c - c^2 - \sqrt{b^2 - 4 * a * c}} * (a - \\
& b + c)) * a^3 * b * c^5 - 25 * \sqrt{a^2 - a * b + b * c - c^2 - \sqrt{b^2 - 4 * a * c}} * (a - \\
& b + c)) * a^2 * b^2 * c^5 + 20 * \sqrt{a^2 - a * b + b * c - c^2 - \sqrt{b^2 - 4 * a * c}} * (a \\
& - b + c)) * a^3 * c^6 - 4 * (b^2 - 4 * a * c) * a^3 * b^5 + 8 * (b^2 - 4 * a * c) * a^2 * b^6 - 4 * ( \\
& b^2 - 4 * a * c) * a * b^7 + 24 * (b^2 - 4 * a * c) * a^4 * b^3 * c - 52 * (b^2 - 4 * a * c) * a^3 * b^4 * \\
& c + 24 * (b^2 - 4 * a * c) * a^2 * b^5 * c + 4 * (b^2 - 4 * a * c) * a * b^6 * c - 32 * (b^2 - 4 * a * c) \\
& * a^5 * b * c^2 + 84 * (b^2 - 4 * a * c) * a^4 * b^2 * c^2 - 24 * (b^2 - 4 * a * c) * a^3 * b^3 * c^2 - \\
& 36 * (b^2 - 4 * a * c) * a^2 * b^4 * c^2 + 4 * (b^2 - 4 * a * c) * a * b^5 * c^2 - 16 * (b^2 - 4 * a * c) \\
& * a^5 * c^3 - 32 * (b^2 - 4 * a * c) * a^4 * b * c^3 + 88 * (b^2 - 4 * a * c) * a^3 * b^2 * c^3 - 16 * ( \\
& b^2 - 4 * a * c) * a^2 * b^3 * c^3 - 4 * (b^2 - 4 * a * c) * a * b^4 * c^3 - 32 * (b^2 - 4 * a * c) * a^4 \\
& * c^4 + 20 * (b^2 - 4 * a * c) * a^2 * b^2 * c^4 - 16 * (b^2 - 4 * a * c) * a^3 * c^5) * \text{abs}(a - b + \\
& c) * \text{abs}(a) - (2 * a^5 * b^6 - 4 * a^4 * b^7 + 2 * a^3 * b^8 - 16 * a^6 * b^4 * c + 30 * a^5 * b^5 \\
& * c - 10 * a^4 * b^6 * c - 2 * a^3 * b^7 * c - 2 * a^2 * b^8 * c + 36 * a^7 * b^2 * c^2 - 58 * a^6 * b^3 \\
& * c^2 - 8 * a^5 * b^4 * c^2 + 12 * a^4 * b^5 * c^2 + 14 * a^3 * b^6 * c^2 + 6 * a^2 * b^7 * c^2 - 16 \\
& * a^8 * c^3 + 8 * a^7 * b * c^3 + 68 * a^6 * b^2 * c^3 - 10 * a^5 * b^3 * c^3 - 20 * a^4 * b^4 * c^3 - \\
& 44 * a^3 * b^5 * c^3 - 6 * a^2 * b^6 * c^3 - 16 * a^7 * c^4 - 24 * a^6 * b * c^4 - 20 * a^5 * b^2 * c^4 \\
& + 82 * a^4 * b^3 * c^4 + 44 * a^3 * b^4 * c^4 + 2 * a^2 * b^5 * c^4 + 16 * a^6 * c^5 - 8 * a^5 * b * \\
& c^5 - 84 * a^4 * b^2 * c^5 - 14 * a^3 * b^3 * c^5 + 16 * a^5 * c^6 + 24 * a^4 * b * c^6 + 3 * \sqrt{ \\
& a^2 - a * b + b * c - c^2 - \sqrt{b^2 - 4 * a * c}} * (a - b + c)) * \sqrt{b^2 - 4 * a * c} * a^ \\
& 5 * b^4 - 2 * (b^2 - 4 * a * c) * a^5 * b^4 - 2 * \sqrt{a^2 - a * b + b * c - c^2 - \sqrt{b^2 - \\
& 4 * a * c}} * (a - b + c)) * \sqrt{b^2 - 4 * a * c} * a^4 * b^5 + 4 * (b^2 - 4 * a * c) * a^4 * b^5 - \\
& 5 * \sqrt{a^2 - a * b + b * c - c^2 - \sqrt{b^2 - 4 * a * c}} * (a - b + c)) * \sqrt{b^2 - 4 * \\
& a * c} * a^3 * b^6 - 2 * (b^2 - 4 * a * c) * a^3 * b^6 - 12 * \sqrt{a^2 - a * b + b * c - c^2 - \sqrt{ \\
& b^2 - 4 * a * c}} * (a - b + c)) * \sqrt{b^2 - 4 * a * c} * a^6 * b^2 * c + 8 * (b^2 - 4 * a * c) * \\
& a^6 * b^2 * c + 5 * \sqrt{a^2 - a * b + b * c - c^2 - \sqrt{b^2 - 4 * a * c}} * (a - b + c)) * \sqrt{ \\
& b^2 - 4 * a * c} * a^5 * b^3 * c - 14 * (b^2 - 4 * a * c) * a^5 * b^3 * c + 33 * \sqrt{a^2 - a * b \\
& + b * c - c^2 - \sqrt{b^2 - 4 * a * c}} * (a - b + c)) * \sqrt{b^2 - 4 * a * c} * a^4 * b^4 * c + \\
& 2 * (b^2 - 4 * a * c) * a^4 * b^4 * c + 13 * \sqrt{a^2 - a * b + b * c - c^2 - \sqrt{b^2 - 4 * a \\
& * c}} * (a - b + c)) * \sqrt{b^2 - 4 * a * c} * a^3 * b^5 * c + 2 * (b^2 - 4 * a * c) * a^3 * b^5 * c + \\
& 5 * \sqrt{a^2 - a * b + b * c - c^2 - \sqrt{b^2 - 4 * a * c}} * (a - b + c)) * \sqrt{b^2 - 4 * \\
& a * c} * a^2 * b^6 * c + 2 * (b^2 - 4 * a * c) * a^2 * b^6 * c + 6 * \sqrt{a^2 - a * b + b * c - c^2 - \\
& \sqrt{b^2 - 4 * a * c}} * (a - b + c)) * \sqrt{b^2 - 4 * a * c} * a^7 * c^2 - 4 * (b^2 - 4 * a * c) \\
& * a^7 * c^2 + 5 * \sqrt{a^2 - a * b + b * c - c^2 - \sqrt{b^2 - 4 * a * c}} * (a - b + c)) * \sqrt{ \\
& b^2 - 4 * a * c} * a^6 * b * c^2 + 2 * (b^2 - 4 * a * c) * a^6 * b * c^2 - 60 * \sqrt{a^2 - a * b + \\
& b * c - c^2 - \sqrt{b^2 - 4 * a * c}} * (a - b + c)) * \sqrt{b^2 - 4 * a * c} * a^5 * b^2 * c^2 + \\
& 16 * (b^2 - 4 * a * c) * a^5 * b^2 * c^2 - 58 * \sqrt{a^2 - a * b + b * c - c^2 - \sqrt{b^2 - \\
& 4 * a * c}} * (a - b + c)) * \sqrt{b^2 - 4 * a * c} * a^4 * b^3 * c^2 - 4 * (b^2 - 4 * a * c) * a^4 * b^3 \\
& * c^2 - 47 * \sqrt{a^2 - a * b + b * c - c^2 - \sqrt{b^2 - 4 * a * c}} * (a - b + c)) * \sqrt{ \\
& b^2 - 4 * a * c} * a^3 * b^4 * c^2 - 6 * (b^2 - 4 * a * c) * a^3 * b^4 * c^2 - 11 * \sqrt{a^2 - a * b
\end{aligned}$$

```

+ b*c - c^2 - sqrt(b^2 - 4*a*c)*(a - b + c))*sqrt(b^2 - 4*a*c)*a^2*b^5*c^2
- 6*(b^2 - 4*a*c)*a^2*b^5*c^2 + 22*sqrt(a^2 - a*b + b*c - c^2 - sqrt(b^2 -
4*a*c)*(a - b + c))*sqrt(b^2 - 4*a*c)*a^6*c^3 - 4*(b^2 - 4*a*c)*a^6*c^3 + 4
9*sqrt(a^2 - a*b + b*c - c^2 - sqrt(b^2 - 4*a*c)*(a - b + c))*sqrt(b^2 - 4*
a*c)*a^5*b*c^3 - 6*(b^2 - 4*a*c)*a^5*b*c^3 + 110*sqrt(a^2 - a*b + b*c - c^2
- sqrt(b^2 - 4*a*c)*(a - b + c))*sqrt(b^2 - 4*a*c)*a^4*b^2*c^3 - 4*(b^2 -
4*a*c)*a^4*b^2*c^3 + 58*sqrt(a^2 - a*b + b*c - c^2 - sqrt(b^2 - 4*a*c)*(a -
b + c))*sqrt(b^2 - 4*a*c)*a^3*b^3*c^3 + 20*(b^2 - 4*a*c)*a^3*b^3*c^3 + 11*
sqrt(a^2 - a*b + b*c - c^2 - sqrt(b^2 - 4*a*c)*(a - b + c))*sqrt(b^2 - 4*a*
c)*a^2*b^4*c^3 + 6*(b^2 - 4*a*c)*a^2*b^4*c^3 - 38*sqrt(a^2 - a*b + b*c - c^
2 - sqrt(b^2 - 4*a*c)*(a - b + c))*sqrt(b^2 - 4*a*c)*a^5*c^4 + 4*(b^2 - 4*a
*c)*a^5*c^4 - 69*sqrt(a^2 - a*b + b*c - c^2 - sqrt(b^2 - 4*a*c)*(a - b + c)
)*sqrt(b^2 - 4*a*c)*a^4*b*c^4 - 2*(b^2 - 4*a*c)*a^4*b*c^4 - 38*sqrt(a^2 - a
*b + b*c - c^2 - sqrt(b^2 - 4*a*c)*(a - b + c))*sqrt(b^2 - 4*a*c)*a^3*b^2*c
^4 - 20*(b^2 - 4*a*c)*a^3*b^2*c^4 - 5*sqrt(a^2 - a*b + b*c - c^2 - sqrt(b^2
- 4*a*c)*(a - b + c))*sqrt(b^2 - 4*a*c)*a^2*b^3*c^4 - 2*(b^2 - 4*a*c)*a^2*
b^3*c^4 + 10*sqrt(a^2 - a*b + b*c - c^2 - sqrt(b^2 - 4*a*c)*(a - b + c))*sq
rt(b^2 - 4*a*c)*a^4*c^5 + 4*(b^2 - 4*a*c)*a^4*c^5 + 15*sqrt(a^2 - a*b + b*c
- c^2 - sqrt(b^2 - 4*a*c)*(a - b + c))*sqrt(b^2 - 4*a*c)*a^3*b*c^5 + 6*(b^
2 - 4*a*c)*a^3*b*c^5)*abs(a - b + c))*(pi*floor(1/2*x/pi + 1/2) + arctan(2*
sqrt(1/2)*tan(1/2*x)/sqrt((2*a^4 - 2*a^3*c - sqrt(-4*(a^4 + a^3*b + a^3*c)*
(a^4 - a^3*b + a^3*c) + 4*(a^4 - a^3*c)^2))/(a^4 - a^3*b + a^3*c))))/((3*a^
10*b^2 - 8*a^9*b^3 - a^8*b^4 + 16*a^7*b^5 - 7*a^6*b^6 - 8*a^5*b^7 + 5*a^4*b
^8 - 12*a^11*c + 32*a^10*b*c + 30*a^9*b^2*c - 112*a^8*b^3*c + 8*a^7*b^4*c +
96*a^6*b^5*c - 26*a^5*b^6*c - 16*a^4*b^7*c - 104*a^10*c^2 + 192*a^9*b*c^2
+ 149*a^8*b^2*c^2 - 336*a^7*b^3*c^2 - 30*a^6*b^4*c^2 + 112*a^5*b^5*c^2 + 17
*a^4*b^6*c^2 - 276*a^9*c^3 + 320*a^8*b*c^3 + 292*a^7*b^2*c^3 - 224*a^6*b^3*
c^3 - 120*a^5*b^4*c^3 - 304*a^8*c^4 + 128*a^7*b*c^4 + 237*a^6*b^2*c^4 + 24*
a^5*b^3*c^4 - 17*a^4*b^4*c^4 - 116*a^7*c^5 - 96*a^6*b*c^5 + 62*a^5*b^2*c^5
+ 16*a^4*b^3*c^5 + 24*a^6*c^6 - 64*a^5*b*c^6 - 5*a^4*b^2*c^6 + 20*a^5*c^7)*
abs(a)) + 1/2*(a^2 + 2*b^2 - 2*a*c)*log(abs(tan(1/2*x) + 1))/a^3 - 1/2*(a^2
+ 2*b^2 - 2*a*c)*log(abs(tan(1/2*x) - 1))/a^3 + (a*tan(1/2*x)^3 + 2*b*tan(
1/2*x)^3 + a*tan(1/2*x) - 2*b*tan(1/2*x))/((tan(1/2*x)^2 - 1)^2*a^2)

```

## Mupad [B] (verification not implemented)

Time = 16.99 (sec) , antiderivative size = 45255, normalized size of antiderivative = 135.49

$$\int \frac{\sec^3(x)}{a + b \cos(x) + c \cos^2(x)} dx = \text{Too large to display}$$

[In] int(1/(cos(x)^3\*(a + b\*cos(x) + c\*cos(x)^2)),x)

[Out] ((tan(x/2)^3\*(a + 2\*b))/a^2 + (tan(x/2)\*(a - 2\*b))/a^2)/(tan(x/2)^4 - 2\*tan(x/2)^2 + 1) - atan(((((((2048\*(26\*a^9\*b^7 - 12\*a^8\*b^8 - 18\*a^10\*b^6 + 6\*a

$$\begin{aligned}
& ^{11}b^5 - 2a^{12}b^4 + 48a^{10}c^6 + 176a^{11}c^5 + 176a^{12}c^4 + 16a^{13}c^3 \\
& - 32a^{14}c^2 + 20a^8b^7c + 74a^9b^6c - 144a^{10}b^5c^2 - 192a^{10} \\
& *b^5c - 352a^{11}b^4c^2 + 122a^{11}b^4c - 144a^{12}b^3c^3 - 40a^{12}b^3c + \\
& 64a^{13}b^2c^2 + 16a^{13}b^2c + 8a^8b^4c^4 - 20a^8b^5c^3 + 4a^8b^6 \\
& *c^2 - 44a^9b^2c^5 + 116a^9b^3c^4 + 10a^9b^4c^3 - 182a^9b^5c^2 \\
& - 148a^{10}b^2c^4 + 496a^{10}b^3c^3 - 50a^{10}b^4c^2 - 260a^{11}b^2c^3 \\
& + 388a^{11}b^3c^2 - 204a^{12}b^2c^2)/a^8 - (2048*\tan(x/2)*((8a^4c^6 - \\
& b^{10} + 8a^5c^5 - b^7*(-(4ac - b^2)^3)^{(1/2)} + b^8c^2 - 10ab^6c^3 + \\
& 33a^2b^4c^4 - 52a^2b^6c^2 - 38a^3b^2c^5 + 96a^3b^4c^3 - 66a^4b^2c^4 + b^5c^2*(-(4ac - b^2)^3)^{(1/2)} + 12ab^8c - 4ab^3c^3*(-(4ac - b^2)^3)^{(1/2)} + 3a^2b^4c*(-(4ac - b^2)^3)^{(1/2)} + 4a^3b^3c^3*(-(4ac - b^2)^3)^{(1/2)} - 10a^2b^3c^2*(-(4ac - b^2)^3)^{(1/2)} + 6ab^5c*(-(4ac - b^2)^3)^{(1/2)})/(2*(a^8b^4 - a^6b^6 + 16a^8c^4 + 32a^9c^3 + 16a^{10}c^2 + 10a^7b^4c - 8a^9b^2c + a^6b^4c^2 - 8a^7b^2c^3 - 32a^8b^2c^2)))^{(1/2)}*(32a^{16}c + 8a^{10}b^7 - 24a^{11}b^6 + 32a^{12}b^5 - 32a^{13}b^4 + 24a^{14}b^3 - 8a^{15}b^2 + 96a^{12}c^5 + 64a^{13}c^4 - 128a^{14}c^3 - 64a^{15}c^2 - 8a^{10}b^6c - 56a^{11}b^5c - 32a^{12}b^4c + 184a^{12}b^4c + 352a^{13}b^3c^3 - 200a^{13}b^3c + 288a^{14}b^2c^2 + 144a^{14}b^2c + 8a^{10}b^4c^3 - 8a^{10}b^5c^2 - 56a^{11}b^2c^4 + 40a^{11}b^3c^3 + 96a^{11}b^4c^2 - 272a^{12}b^2c^3 + 8a^{12}b^3c^2 - 320a^{13}b^2c^2 - 96a^{15}b^3c)/a^8)*((8a^4c^6 - b^{10} + 8a^5c^5 - b^7*(-(4ac - b^2)^3)^{(1/2)} + b^8c^2 - 10ab^6c^3 + 33a^2b^4c^4 - 52a^2b^6c^2 - 38a^3b^2c^5 + 96a^3b^4c^3 - 66a^4b^2c^4 + b^5c^2*(-(4ac - b^2)^3)^{(1/2)} + 12ab^8c - 4ab^3c^3*(-(4ac - b^2)^3)^{(1/2)} + 3a^2b^4c*(-(4ac - b^2)^3)^{(1/2)} + 4a^3b^3c^3*(-(4ac - b^2)^3)^{(1/2)} - 10a^2b^3c^2*(-(4ac - b^2)^3)^{(1/2)} + 6ab^5c*(-(4ac - b^2)^3)^{(1/2)})/(2*(a^8b^4 - a^6b^6 + 16a^8c^4 + 32a^9c^3 + 16a^{10}c^2 + 10a^7b^4c - 8a^9b^2c + a^6b^4c^2 - 8a^7b^2c^3 - 32a^8b^2c^2)))^{(1/2)} + (2048*\tan(x/2))*(8a^{14}c + 8a^4b^{11} - 24a^5b^{10} + 36a^6b^9 - 52a^7b^8 + 61a^8b^7 - 49a^9b^6 + 33a^{10}b^5 - 17a^{11}b^4 + 6a^{12}b^3 - 2a^{13}b^2 + 72a^8c^7 - 136a^9c^6 - 192a^{10}c^5 + 168a^{11}c^4 + 80a^{12}c^3 - 64a^{13}c^2 - 8a^4b^{10}c - 72a^5b^9c + 244a^6b^8c - 308a^7b^7c - 88a^8b^6c + 375a^8b^6c + 496a^9b^5c - 416a^9b^5c - 16a^{10}b^4c + 295a^{10}b^4c - 328a^{11}b^3c^3 - 178a^{11}b^3c + 184a^{12}b^2c^2 + 84a^{12}b^2c + 8a^4b^8c^3 - 8a^4b^9c^2 - 72a^5b^6c^4 + 56a^5b^7c^3 + 112a^5b^8c^2 + 220a^6b^4c^5 - 140a^6b^5c^4 - 424a^6b^6c^3 + 80a^6b^7c^2 - 256a^7b^2c^6 + 192a^7b^3c^5 + 416a^7b^4c^4 + 572a^7b^5c^3 - 732a^7b^6c^2 + 64a^8b^2c^5 - 1152a^8b^3c^4 + 521a^8b^4c^3 + 779a^8b^5c^2 + 234a^9b^2c^4 - 494a^9b^3c^3 - 723a^9b^4c^2 + 180a^{10}b^2c^3 + 770a^{10}b^3c^2 - 416a^{11}b^2c^2 - 24a^{13}b^3c)/a^8)*((8a^4c^6 - b^{10} + 8a^5c^5 - b^7*(-(4ac - b^2)^3)^{(1/2)} + b^8c^2 - 10ab^6c^3 + 33a^2b^4c^4 - 52a^2b^6c^2 - 38a^3b^2c^5 + 96a^3b^4c^3 - 66a^4b^2c^4 + b^5c^2*(-(4ac - b^2)^3)^{(1/2)} + 12ab^8c - 4ab^3c^3*(-(4ac - b^2)^3)^{(1/2)} + 3a^2b^4c*(-(4ac - b^2)^3)^{(1/2)} + 4a^3b^3c^3*(-(4ac - b^2)^3)^{(1/2)} - 10a^2b^3c^2*(-(4ac - b^2)^3)^{(1/2)}
\end{aligned}$$

$$\begin{aligned}
& )^{(1/2)} + 6*a*b^5*c*(-(4*a*c - b^2)^3)^{(1/2)})/(2*(a^8*b^4 - a^6*b^6 + 16*a^8*c^4 + 32*a^9*c^3 + 16*a^10*c^2 + 10*a^7*b^4*c - 8*a^9*b^2*c + a^6*b^4*c^2 - 8*a^7*b^2*c^3 - 32*a^8*b^2*c^2)))^{(1/2)} - (2048*(26*a^3*b^11 - 12*a^2*b^12 - 30*a^4*b^10 + 29*a^5*b^9 - 20*a^6*b^8 + 10*a^7*b^7 - 4*a^8*b^6 + a^9*b^5 + 12*a^6*c^8 + 88*a^7*c^7 + 72*a^8*c^6 - 44*a^9*c^5 - 28*a^10*c^4 + 12*a^11*c^3 + 20*a^2*b^11*c + 98*a^3*b^10*c - 228*a^4*b^9*c + 251*a^5*b^8*c - 96*a^6*b^7*c - 238*a^6*b^7*c - 200*a^7*b^6*c + 154*a^7*b^6*c + 100*a^8*b^5*c - 72*a^8*b^5*c + 112*a^9*b^4*c + 27*a^9*b^4*c - 68*a^10*b^3*c - 6*a^10*b^3*c + 8*a^11*b^2*c + 8*a^2*b^8*c^4 - 20*a^2*b^9*c^3 + 4*a^2*b^10*c^2 - 60*a^3*b^6*c^5 + 156*a^3*b^7*c^4 + 2*a^3*b^8*c^3 - 222*a^3*b^9*c^2 + 136*a^4*b^4*c^6 - 388*a^4*b^5*c^5 - 152*a^4*b^6*c^4 + 856*a^4*b^7*c^3 - 202*a^4*b^8*c^2 - 100*a^5*b^2*c^7 + 364*a^5*b^3*c^6 + 394*a^5*b^4*c^5 - 1362*a^5*b^5*c^4 - 115*a^5*b^6*c^3 + 635*a^5*b^7*c^2 - 340*a^6*b^2*c^6 + 904*a^6*b^3*c^5 + 583*a^6*b^4*c^4 - 564*a^6*b^5*c^3 - 655*a^6*b^6*c^2 - 399*a^7*b^2*c^5 + 9*a^7*b^3*c^4 + 536*a^7*b^4*c^3 + 612*a^7*b^5*c^2 - 37*a^8*b^2*c^4 - 524*a^8*b^3*c^3 - 354*a^8*b^4*c^2 + 239*a^9*b^2*c^3 + 145*a^9*b^3*c^2 - 47*a^10*b^2*c^2))/a^8)*((8*a^4*c^6 - b^10 + 8*a^5*c^5 - b^7*(-(4*a*c - b^2)^3)^{(1/2)} + b^8*c^2 - 10*a*b^6*c^3 + 33*a^2*b^4*c^4 - 52*a^2*b^6*c^2 - 38*a^3*b^2*c^5 + 96*a^3*b^4*c^3 - 66*a^4*b^2*c^4 + b^5*c^2*(-(4*a*c - b^2)^3)^{(1/2)} + 12*a*b^8*c - 4*a*b^3*c^3*(-(4*a*c - b^2)^3)^{(1/2)} + 3*a^2*b^4*(-(4*a*c - b^2)^3)^{(1/2)} + 4*a^3*b^3*(-(4*a*c - b^2)^3)^{(1/2)} - 10*a^2*b^3*c^2*(-(4*a*c - b^2)^3)^{(1/2)} + 6*a*b^5*c*(-(4*a*c - b^2)^3)^{(1/2)})/(2*(a^8*b^4 - a^6*b^6 + 16*a^8*c^4 + 32*a^9*c^3 + 16*a^10*c^2 + 10*a^7*b^4*c - 8*a^9*b^2*c + a^6*b^4*c^2 - 8*a^7*b^2*c^3 - 32*a^8*b^2*c^2)))^{(1/2)} - (2048*tan(x/2)*(4*a*b^12 + 20*b^12*c - 4*b^13 - 4*a^2*b^11 + 4*a^3*b^10 - a^4*b^9 + a^5*b^8 + 12*a^4*c^9 - 44*a^5*c^8 + 2*a^6*c^7 + 38*a^7*c^6 - 18*a^8*c^5 + 2*a^9*c^4 + 4*b^8*c^5 - 20*b^9*c^4 + 40*b^10*c^3 - 40*b^11*c^2 - 24*a*b^6*c^6 + 136*a*b^7*c^5 - 300*a*b^8*c^4 + 320*a*b^9*c^3 - 160*a*b^10*c^2 - 20*a^2*b^10*c + 20*a^3*b^9*c - 92*a^4*b^8*c - 31*a^4*b^8*c + 168*a^5*b^7*c + 4*a^5*b^7*c + 2*a^6*b^6*c - 8*a^6*b^6*c - 84*a^7*b^5*c + 26*a^8*b^4*c + 44*a^2*b^4*c^7 - 300*a^2*b^5*c^6 + 764*a^2*b^6*c^5 - 900*a^2*b^7*c^4 + 460*a^2*b^8*c^3 - 44*a^2*b^9*c^2 - 32*a^3*b^2*c^8 + 272*a^3*b^3*c^7 - 840*a^3*b^4*c^6 + 1156*a^3*b^5*c^5 - 660*a^3*b^6*c^4 + 72*a^3*b^7*c^3 + 8*a^3*b^8*c^2 + 384*a^4*b^2*c^7 - 704*a^4*b^3*c^6 + 541*a^4*b^4*c^5 - 149*a^4*b^5*c^4 + 34*a^4*b^6*c^3 + 6*a^4*b^7*c^2 - 204*a^5*b^2*c^6 + 96*a^5*b^3*c^5 + 41*a^5*b^4*c^4 - 132*a^5*b^5*c^3 + 82*a^5*b^6*c^2 - 90*a^6*b^2*c^5 + 174*a^6*b^3*c^4 - 104*a^6*b^4*c^3 + 8*a^6*b^5*c^2 + 82*a^7*b^2*c^4 - 40*a^7*b^3*c^3 + 20*a^7*b^4*c^2 - 16*a^8*b^2*c^3 + 24*a*b^11*c))/a^8)*((8*a^4*c^6 - b^10 + 8*a^5*c^5 - b^7*(-(4*a*c - b^2)^3)^{(1/2)} + b^8*c^2 - 10*a*b^6*c^3 + 33*a^2*b^4*c^4 - 52*a^2*b^6*c^2 - 38*a^3*b^2*c^5 + 96*a^3*b^4*c^3 - 66*a^4*b^2*c^4 + b^5*c^2*(-(4*a*c - b^2)^3)^{(1/2)} + 12*a*b^8*c - 4*a*b^3*c^3*(-(4*a*c - b^2)^3)^{(1/2)} + 3*a^2*b^4*(-(4*a*c - b^2)^3)^{(1/2)} + 4*a^3*b^3*(-(4*a*c - b^2)^3)^{(1/2)} - 10*a^2*b^3*c^2*(-(4*a*c - b^2)^3)^{(1/2)} + 6*a*b^5*c*(-(4*a*c - b^2)^3)^{(1/2)})/(2*(a^8*b^4 - a^6*b^6 + 16*a^8*c^4 + 32*a^9*c^3 + 16*a^10*c^2 + 10*a^7*b^4*c - 8*a^9*b^2*c + a^6*b^4*c^2 - 8*a^7*b^2*c^3 - 32*a^8*b^2*c^2)))^{(1/2)}*i - (
\end{aligned}$$

$$\begin{aligned}
& (((2048*(26*a^9*b^7 - 12*a^8*b^8 - 18*a^10*b^6 + 6*a^11*b^5 - 2*a^12*b^4 + \\
& 48*a^10*c^6 + 176*a^11*c^5 + 176*a^12*c^4 + 16*a^13*c^3 - 32*a^14*c^2 + 20 \\
& *a^8*b^7*c + 74*a^9*b^6*c - 144*a^10*b^5*c^2 - 192*a^10*b^5*c - 352*a^11*b^4*c^3 \\
& + 122*a^11*b^4*c - 144*a^12*b^3*c^3 - 40*a^12*b^3*c + 64*a^13*b^2*c^2 + 16*a^13 \\
& *b^2*c + 8*a^8*b^4*c^4 - 20*a^8*b^5*c^3 + 4*a^8*b^6*c^2 - 44*a^9*b^2*c^5 \\
& + 116*a^9*b^3*c^4 + 10*a^9*b^4*c^3 - 182*a^9*b^5*c^2 - 148*a^10*b^2*c^4 + 4 \\
& 96*a^10*b^3*c^3 - 50*a^10*b^4*c^2 - 260*a^11*b^2*c^3 + 388*a^11*b^3*c^2 - 2 \\
& 04*a^12*b^2*c^2))/a^8 + (2048*\tan(x/2)*((8*a^4*c^6 - b^10 + 8*a^5*c^5 - b^7 \\
& *(-(4*a*c - b^2)^3)^{(1/2)} + b^8*c^2 - 10*a*b^6*c^3 + 33*a^2*b^4*c^4 - 52*a^2 \\
& *b^6*c^2 - 38*a^3*b^2*c^5 + 96*a^3*b^4*c^3 - 66*a^4*b^2*c^4 + b^5*c^2*(-(4 \\
& *a*c - b^2)^3)^{(1/2)} + 12*a*b^8*c - 4*a*b^3*c^3*(-(4*a*c - b^2)^3)^{(1/2)} + \\
& 3*a^2*b^4*c^4*(-(4*a*c - b^2)^3)^{(1/2)} + 4*a^3*b^2*c^3*(-(4*a*c - b^2)^3)^{(1/2)} \\
& - 10*a^2*b^3*c^2*(-(4*a*c - b^2)^3)^{(1/2)} + 6*a*b^5*c*(-(4*a*c - b^2)^3)^{(1/2)} \\
& ))/(2*(a^8*b^4 - a^6*b^6 + 16*a^8*c^4 + 32*a^9*c^3 + 16*a^10*c^2 + 10*a^7 \\
& *b^4*c - 8*a^9*b^2*c + a^6*b^4*c^2 - 8*a^7*b^2*c^3 - 32*a^8*b^2*c^2)))^{(1/2)} \\
& * (32*a^16*c + 8*a^10*b^7 - 24*a^11*b^6 + 32*a^12*b^5 - 32*a^13*b^4 + 24*a^14 \\
& *b^3 - 8*a^15*b^2 + 96*a^12*c^5 + 64*a^13*c^4 - 128*a^14*c^3 - 64*a^15*c^2 - 8*a^10 \\
& *b^6*c - 56*a^11*b^5*c - 32*a^12*b^4*c + 184*a^12*b^4*c + 352*a^13*b^3*c^3 - 200*a^13 \\
& *b^3*c + 288*a^14*b^2*c^2 + 144*a^14*b^2*c + 8*a^10*b^4*c^3 - 8*a^10*b^5*c^2 - 56*a^11 \\
& *b^2*c^4 + 40*a^11*b^3*c^3 + 96*a^11*b^4*c^2 - 272*a^12*b^2*c^3 + 8*a^12*b^3*c^2 - 320*a^13 \\
& *b^2*c^2 - 96*a^15*b*c))/a^8 * ((8*a^4*c^6 - b^10 + 8*a^5*c^5 - b^7 *(-(4*a*c - b^2)^3)^{(1/2)} \\
& + b^8*c^2 - 10*a*b^6*c^3 + 33*a^2*b^4*c^4 - 52*a^2*b^6*c^2 - 38*a^3*b^2*c^5 + 96*a^3*b^4 \\
& *c^3 - 66*a^4*b^2*c^4 + b^5*c^2*(-(4*a*c - b^2)^3)^{(1/2)} + 12*a*b^8*c - 4*a*b^3 \\
& *c^3*(-(4*a*c - b^2)^3)^{(1/2)} + 3*a^2*b^4*c^4*(-(4*a*c - b^2)^3)^{(1/2)} + 4 \\
& *a^3*b^2*c^3*(-(4*a*c - b^2)^3)^{(1/2)} - 10*a^2*b^3*c^2*(-(4*a*c - b^2)^3)^{(1/2)} \\
& + 6*a*b^5*c*(-(4*a*c - b^2)^3)^{(1/2)}))/ (2*(a^8*b^4 - a^6*b^6 + 16*a^8*c^4 \\
& + 32*a^9*c^3 + 16*a^10*c^2 + 10*a^7*b^4*c - 8*a^9*b^2*c + a^6*b^4*c^2 - 8*a^7 \\
& *b^2*c^3 - 32*a^8*b^2*c^2)))^{(1/2)} - (2048*\tan(x/2)*(8*a^14*c + 8*a^4*b^11 \\
& - 24*a^5*b^10 + 36*a^6*b^9 - 52*a^7*b^8 + 61*a^8*b^7 - 49*a^9*b^6 + 33*a^10 \\
& *b^5 - 17*a^11*b^4 + 6*a^12*b^3 - 2*a^13*b^2 + 72*a^8*c^7 - 136*a^9*c^6 - 192*a^10 \\
& *c^5 + 168*a^11*c^4 + 80*a^12*c^3 - 64*a^13*c^2 - 8*a^4*b^10*c - 72*a^5*b^9*c + 244*a^6 \\
& *b^8*c - 308*a^7*b^7*c - 88*a^8*b^6*c + 375*a^8*b^6*c + 496*a^9*b^5*c - 416*a^9*b^5*c \\
& - 16*a^10*b^4*c + 295*a^10*b^4*c - 328*a^11*b^3*c^3 - 178*a^11*b^3*c + 184*a^12*b^2*c^2 + 84*a^12 \\
& *b^2*c + 8*a^4*b^8*c^3 - 8*a^4*b^9*c^2 - 72*a^5*b^6*c^4 + 56*a^5*b^7*c^3 + 112*a^5*b^8*c^2 + 220*a^6 \\
& *b^4*c^5 - 140*a^6*b^5*c^4 - 424*a^6*b^6*c^3 + 80*a^6*b^7*c^2 - 256*a^7*b^2*c^6 + 192*a^7 \\
& *b^3*c^5 + 416*a^7*b^4*c^4 + 572*a^7*b^5*c^3 - 732*a^7*b^6*c^2 + 64*a^8*b^2*c^5 - 1152*a^8 \\
& *b^3*c^4 + 521*a^8*b^4*c^3 + 779*a^8*b^5*c^2 + 234*a^9*b^2*c^4 - 494*a^9*b^3*c^3 - 723*a^9 \\
& *b^4*c^2 + 180*a^10*b^2*c^3 + 770*a^10*b^3*c^2 - 416*a^11*b^2*c^2 - 24*a^13*b*c))/a^8 * ((8*a^4 \\
& *c^6 - b^10 + 8*a^5*c^5 - b^7 *(-(4*a*c - b^2)^3)^{(1/2)} + b^8*c^2 - 10*a*b^6*c^3 + 33*a^2 \\
& *b^4*c^4 - 52*a^2*b^6*c^2 - 38*a^3*b^2*c^5 + 96*a^3*b^4*c^3 - 66*a^4*b^2*c^4 + b^5*c^2 \\
& *(-(4*a*c - b^2)^3)^{(1/2)} + 12*a*b^8*c - 4*a*b^3*c^3*(-(4*a*c - b^2)^3)^{(1/2)} + 3*a^2 \\
& *b^4*c^4*(-(4*a*c - b^2)^3)^{(1/2)} + 4*a^3*b^2*c^3*(-(4*a
\end{aligned}$$

$$\begin{aligned}
& *c - b^2)^3)^{(1/2)} - 10*a^2*b^3*c^2*(-(4*a*c - b^2)^3)^{(1/2)} + 6*a*b^5*c*(- \\
& (4*a*c - b^2)^3)^{(1/2)})/(2*(a^8*b^4 - a^6*b^6 + 16*a^8*c^4 + 32*a^9*c^3 + 1 \\
& 6*a^10*c^2 + 10*a^7*b^4*c - 8*a^9*b^2*c + a^6*b^4*c^2 - 8*a^7*b^2*c^3 - 32* \\
& a^8*b^2*c^2)))^{(1/2)} - (2048*(26*a^3*b^11 - 12*a^2*b^12 - 30*a^4*b^10 + 29* \\
& a^5*b^9 - 20*a^6*b^8 + 10*a^7*b^7 - 4*a^8*b^6 + a^9*b^5 + 12*a^6*c^8 + 88*a \\
& ^7*c^7 + 72*a^8*c^6 - 44*a^9*c^5 - 28*a^10*c^4 + 12*a^11*c^3 + 20*a^2*b^11* \\
& c + 98*a^3*b^10*c - 228*a^4*b^9*c + 251*a^5*b^8*c - 96*a^6*b^7*c - 238*a^6* \\
& b^7*c - 200*a^7*b^6*c + 154*a^7*b^6*c + 100*a^8*b^5*c - 72*a^8*b^5*c + 112* \\
& a^9*b^4*c + 27*a^9*b^4*c - 68*a^10*b^3*c - 6*a^10*b^3*c + 8*a^11*b^2*c + 8* \\
& a^2*b^8*c^4 - 20*a^2*b^9*c^3 + 4*a^2*b^10*c^2 - 60*a^3*b^6*c^5 + 156*a^3*b^ \\
& 7*c^4 + 2*a^3*b^8*c^3 - 222*a^3*b^9*c^2 + 136*a^4*b^4*c^6 - 388*a^4*b^5*c^5 \\
& - 152*a^4*b^6*c^4 + 856*a^4*b^7*c^3 - 202*a^4*b^8*c^2 - 100*a^5*b^2*c^7 + \\
& 364*a^5*b^3*c^6 + 394*a^5*b^4*c^5 - 1362*a^5*b^5*c^4 - 115*a^5*b^6*c^3 + 63 \\
& 5*a^5*b^7*c^2 - 340*a^6*b^2*c^6 + 904*a^6*b^3*c^5 + 583*a^6*b^4*c^4 - 564*a \\
& ^6*b^5*c^3 - 655*a^6*b^6*c^2 - 399*a^7*b^2*c^5 + 9*a^7*b^3*c^4 + 536*a^7*b^ \\
& 4*c^3 + 612*a^7*b^5*c^2 - 37*a^8*b^2*c^4 - 524*a^8*b^3*c^3 - 354*a^8*b^4*c^ \\
& 2 + 239*a^9*b^2*c^3 + 145*a^9*b^3*c^2 - 47*a^10*b^2*c^2))/a^8)*((8*a^4*c^6 \\
& - b^10 + 8*a^5*c^5 - b^7*(-(4*a*c - b^2)^3)^{(1/2)} + b^8*c^2 - 10*a*b^6*c^3 \\
& + 33*a^2*b^4*c^4 - 52*a^2*b^6*c^2 - 38*a^3*b^2*c^5 + 96*a^3*b^4*c^3 - 66*a^ \\
& 4*b^2*c^4 + b^5*c^2*(-(4*a*c - b^2)^3)^{(1/2)} + 12*a*b^8*c - 4*a*b^3*c^3*(-( \\
& 4*a*c - b^2)^3)^{(1/2)} + 3*a^2*b*c^4*(-(4*a*c - b^2)^3)^{(1/2)} + 4*a^3*b*c^3* \\
& (-(4*a*c - b^2)^3)^{(1/2)} - 10*a^2*b^3*c^2*(-(4*a*c - b^2)^3)^{(1/2)} + 6*a*b^ \\
& 5*c*(-(4*a*c - b^2)^3)^{(1/2)})/(2*(a^8*b^4 - a^6*b^6 + 16*a^8*c^4 + 32*a^9*c \\
& ^3 + 16*a^10*c^2 + 10*a^7*b^4*c - 8*a^9*b^2*c + a^6*b^4*c^2 - 8*a^7*b^2*c^3 \\
& - 32*a^8*b^2*c^2)))^{(1/2)} + (2048*\tan(x/2)*(4*a*b^12 + 20*b^12*c - 4*b^13 \\
& - 4*a^2*b^11 + 4*a^3*b^10 - a^4*b^9 + a^5*b^8 + 12*a^4*c^9 - 44*a^5*c^8 + 2 \\
& *a^6*c^7 + 38*a^7*c^6 - 18*a^8*c^5 + 2*a^9*c^4 + 4*b^8*c^5 - 20*b^9*c^4 + 4 \\
& 0*b^10*c^3 - 40*b^11*c^2 - 24*a*b^6*c^6 + 136*a*b^7*c^5 - 300*a*b^8*c^4 + 3 \\
& 20*a*b^9*c^3 - 160*a*b^10*c^2 - 20*a^2*b^10*c + 20*a^3*b^9*c - 92*a^4*b^8*c \\
& - 31*a^4*b^8*c + 168*a^5*b^7*c + 4*a^5*b^7*c + 2*a^6*b^6*c - 8*a^6*b^6*c - \\
& 84*a^7*b^5*c + 26*a^8*b^4*c + 44*a^2*b^4*c^7 - 300*a^2*b^5*c^6 + 764*a^2*b \\
& ^6*c^5 - 900*a^2*b^7*c^4 + 460*a^2*b^8*c^3 - 44*a^2*b^9*c^2 - 32*a^3*b^2*c^ \\
& 8 + 272*a^3*b^3*c^7 - 840*a^3*b^4*c^6 + 1156*a^3*b^5*c^5 - 660*a^3*b^6*c^4 \\
& + 72*a^3*b^7*c^3 + 8*a^3*b^8*c^2 + 384*a^4*b^2*c^7 - 704*a^4*b^3*c^6 + 541* \\
& a^4*b^4*c^5 - 149*a^4*b^5*c^4 + 34*a^4*b^6*c^3 + 6*a^4*b^7*c^2 - 204*a^5*b^ \\
& 2*c^6 + 96*a^5*b^3*c^5 + 41*a^5*b^4*c^4 - 132*a^5*b^5*c^3 + 82*a^5*b^6*c^2 \\
& - 90*a^6*b^2*c^5 + 174*a^6*b^3*c^4 - 104*a^6*b^4*c^3 + 8*a^6*b^5*c^2 + 82*a \\
& ^7*b^2*c^4 - 40*a^7*b^3*c^3 + 20*a^7*b^4*c^2 - 16*a^8*b^2*c^3 + 24*a*b^11*c \\
& ))/a^8)*((8*a^4*c^6 - b^10 + 8*a^5*c^5 - b^7*(-(4*a*c - b^2)^3)^{(1/2)} + b^8 \\
& *c^2 - 10*a*b^6*c^3 + 33*a^2*b^4*c^4 - 52*a^2*b^6*c^2 - 38*a^3*b^2*c^5 + 96 \\
& *a^3*b^4*c^3 - 66*a^4*b^2*c^4 + b^5*c^2*(-(4*a*c - b^2)^3)^{(1/2)} + 12*a*b^8 \\
& *c - 4*a*b^3*c^3*(-(4*a*c - b^2)^3)^{(1/2)} + 3*a^2*b*c^4*(-(4*a*c - b^2)^3)^ \\
& (1/2) + 4*a^3*b*c^3*(-(4*a*c - b^2)^3)^{(1/2)} - 10*a^2*b^3*c^2*(-(4*a*c - b^ \\
& 2)^3)^{(1/2)} + 6*a*b^5*c*(-(4*a*c - b^2)^3)^{(1/2)})/(2*(a^8*b^4 - a^6*b^6 + 1 \\
& 6*a^8*c^4 + 32*a^9*c^3 + 16*a^10*c^2 + 10*a^7*b^4*c - 8*a^9*b^2*c + a^6*b^4
\end{aligned}$$

$$\begin{aligned}
& *c^2 - 8*a^7*b^2*c^3 - 32*a^8*b^2*c^2))^{(1/2)}*1i)/((4096*(14*a^3*c^9 + a^4 \\
& *c^8 - 10*a^5*c^7 + 3*a^6*c^6 - 4*b^4*c^8 + 16*b^5*c^7 - 24*b^6*c^6 + 16*b^ \\
& 7*c^5 - 4*b^8*c^4 + 4*a*b^2*c^9 - 28*a*b^3*c^8 + 56*a*b^4*c^7 - 40*a*b^5*c^ \\
& 6 + 4*a*b^6*c^5 + 4*a*b^7*c^4 + 12*a^2*b*c^9 - 22*a^3*b*c^8 + 4*a^4*b*c^7 + \\
& 6*a^5*b*c^6 - 2*a^6*b*c^5 - 48*a^2*b^2*c^8 + 48*a^2*b^3*c^7 - 8*a^2*b^4*c^ \\
& 6 - 4*a^2*b^6*c^4 + 4*a^3*b^2*c^7 - 4*a^3*b^3*c^6 + 4*a^3*b^5*c^4 + 10*a^4* \\
& b^2*c^6 - 8*a^4*b^3*c^5 - a^4*b^4*c^4 - a^5*b^2*c^5 + a^5*b^3*c^4))/a^8 + ( \\
& (((((2048*(26*a^9*b^7 - 12*a^8*b^8 - 18*a^10*b^6 + 6*a^11*b^5 - 2*a^12*b^4 + \\
& 48*a^10*c^6 + 176*a^11*c^5 + 176*a^12*c^4 + 16*a^13*c^3 - 32*a^14*c^2 + 20 \\
& *a^8*b^7*c + 74*a^9*b^6*c - 144*a^10*b*c^5 - 192*a^10*b^5*c - 352*a^11*b*c^ \\
& 4 + 122*a^11*b^4*c - 144*a^12*b*c^3 - 40*a^12*b^3*c + 64*a^13*b*c^2 + 16*a^ \\
& 13*b^2*c + 8*a^8*b^4*c^4 - 20*a^8*b^5*c^3 + 4*a^8*b^6*c^2 - 44*a^9*b^2*c^5 \\
& + 116*a^9*b^3*c^4 + 10*a^9*b^4*c^3 - 182*a^9*b^5*c^2 - 148*a^10*b^2*c^4 + 4 \\
& 96*a^10*b^3*c^3 - 50*a^10*b^4*c^2 - 260*a^11*b^2*c^3 + 388*a^11*b^3*c^2 - 2 \\
& 04*a^12*b^2*c^2))/a^8 - (2048*tan(x/2)*((8*a^4*c^6 - b^10 + 8*a^5*c^5 - b^7 \\
& *(-(4*a*c - b^2)^3)^{(1/2)} + b^8*c^2 - 10*a*b^6*c^3 + 33*a^2*b^4*c^4 - 52*a^ \\
& 2*b^6*c^2 - 38*a^3*b^2*c^5 + 96*a^3*b^4*c^3 - 66*a^4*b^2*c^4 + b^5*c^2*(-(4 \\
& *a*c - b^2)^3)^{(1/2)} + 12*a*b^8*c - 4*a*b^3*c^3*(-(4*a*c - b^2)^3)^{(1/2)} + \\
& 3*a^2*b*c^4*(-(4*a*c - b^2)^3)^{(1/2)} + 4*a^3*b*c^3*(-(4*a*c - b^2)^3)^{(1/2)} \\
& - 10*a^2*b^3*c^2*(-(4*a*c - b^2)^3)^{(1/2)} + 6*a*b^5*c*(-(4*a*c - b^2)^3)^{( \\
& 1/2)))/(2*(a^8*b^4 - a^6*b^6 + 16*a^8*c^4 + 32*a^9*c^3 + 16*a^10*c^2 + 10*a^ \\
& 7*b^4*c - 8*a^9*b^2*c + a^6*b^4*c^2 - 8*a^7*b^2*c^3 - 32*a^8*b^2*c^2)))^{(1/ \\
& 2)}*(32*a^16*c + 8*a^10*b^7 - 24*a^11*b^6 + 32*a^12*b^5 - 32*a^13*b^4 + 24*a \\
& ^14*b^3 - 8*a^15*b^2 + 96*a^12*c^5 + 64*a^13*c^4 - 128*a^14*c^3 - 64*a^15*c \\
& ^2 - 8*a^10*b^6*c - 56*a^11*b^5*c - 32*a^12*b*c^4 + 184*a^12*b^4*c + 352*a^ \\
& 13*b*c^3 - 200*a^13*b^3*c + 288*a^14*b*c^2 + 144*a^14*b^2*c + 8*a^10*b^4*c^ \\
& 3 - 8*a^10*b^5*c^2 - 56*a^11*b^2*c^4 + 40*a^11*b^3*c^3 + 96*a^11*b^4*c^2 - \\
& 272*a^12*b^2*c^3 + 8*a^12*b^3*c^2 - 320*a^13*b^2*c^2 - 96*a^15*b*c))/a^8)*( \\
& (8*a^4*c^6 - b^10 + 8*a^5*c^5 - b^7*(-(4*a*c - b^2)^3)^{(1/2)} + b^8*c^2 - 10 \\
& *a*b^6*c^3 + 33*a^2*b^4*c^4 - 52*a^2*b^6*c^2 - 38*a^3*b^2*c^5 + 96*a^3*b^4* \\
& c^3 - 66*a^4*b^2*c^4 + b^5*c^2*(-(4*a*c - b^2)^3)^{(1/2)} + 12*a*b^8*c - 4*a* \\
& b^3*c^3*(-(4*a*c - b^2)^3)^{(1/2)} + 3*a^2*b*c^4*(-(4*a*c - b^2)^3)^{(1/2)} + 4 \\
& *a^3*b*c^3*(-(4*a*c - b^2)^3)^{(1/2)} - 10*a^2*b^3*c^2*(-(4*a*c - b^2)^3)^{(1/ \\
& 2)} + 6*a*b^5*c*(-(4*a*c - b^2)^3)^{(1/2)))/(2*(a^8*b^4 - a^6*b^6 + 16*a^8*c^4 \\
& + 32*a^9*c^3 + 16*a^10*c^2 + 10*a^7*b^4*c - 8*a^9*b^2*c + a^6*b^4*c^2 - 8* \\
& a^7*b^2*c^3 - 32*a^8*b^2*c^2)))^{(1/2)} + (2048*tan(x/2)*(8*a^14*c + 8*a^4*b^ \\
& 11 - 24*a^5*b^10 + 36*a^6*b^9 - 52*a^7*b^8 + 61*a^8*b^7 - 49*a^9*b^6 + 33*a \\
& ^10*b^5 - 17*a^11*b^4 + 6*a^12*b^3 - 2*a^13*b^2 + 72*a^8*c^7 - 136*a^9*c^6 \\
& - 192*a^10*c^5 + 168*a^11*c^4 + 80*a^12*c^3 - 64*a^13*c^2 - 8*a^4*b^10*c - \\
& 72*a^5*b^9*c + 244*a^6*b^8*c - 308*a^7*b^7*c - 88*a^8*b*c^6 + 375*a^8*b^6*c \\
& + 496*a^9*b*c^5 - 416*a^9*b^5*c - 16*a^10*b*c^4 + 295*a^10*b^4*c - 328*a^1 \\
& 1*b*c^3 - 178*a^11*b^3*c + 184*a^12*b*c^2 + 84*a^12*b^2*c + 8*a^4*b^8*c^3 - \\
& 8*a^4*b^9*c^2 - 72*a^5*b^6*c^4 + 56*a^5*b^7*c^3 + 112*a^5*b^8*c^2 + 220*a^ \\
& 6*b^4*c^5 - 140*a^6*b^5*c^4 - 424*a^6*b^6*c^3 + 80*a^6*b^7*c^2 - 256*a^7*b^ \\
& 2*c^6 + 192*a^7*b^3*c^5 + 416*a^7*b^4*c^4 + 572*a^7*b^5*c^3 - 732*a^7*b^6*c
\end{aligned}$$

$$\begin{aligned}
&^2 + 64a^8b^2c^5 - 1152a^8b^3c^4 + 521a^8b^4c^3 + 779a^8b^5c^2 \\
&+ 234a^9b^2c^4 - 494a^9b^3c^3 - 723a^9b^4c^2 + 180a^{10}b^2c^3 + \\
&770a^{10}b^3c^2 - 416a^{11}b^2c^2 - 24a^{13}b^2c^2)/a^8)*((8a^4c^6 - b^{10} \\
&+ 8a^5c^5 - b^7*(-(4ac - b^2)^3)^{1/2} + b^8c^2 - 10ab^6c^3 + 33a^2b^4c^4 \\
&- 52a^2b^6c^2 - 38a^3b^2c^5 + 96a^3b^4c^3 - 66a^4b^2c^4 + b^5c^2*(-(4ac - b^2)^3)^{1/2} \\
&+ 12ab^8c - 4ab^3c^3*(-(4ac - b^2)^3)^{1/2} + 3a^2b^4c^4*(-(4ac - b^2)^3)^{1/2} \\
&+ 4a^3b^3c^3*(-(4ac - b^2)^3)^{1/2} - 10a^2b^3c^2*(-(4ac - b^2)^3)^{1/2} + 6ab^5c*(-(4ac - b^2)^3)^{1/2}) \\
&/((2(a^8b^4 - a^6b^6 + 16a^8c^4 + 32a^9c^3 + 16a^{10}c^2 + 10a^7b^4c - 8a^9b^2c + a^6b^4c^2 - 8a^7b^2c^3 - 32a^8b^2c^2)))^{1/2} \\
&- (2048*(26a^3b^{11} - 12a^2b^{12} - 30a^4b^{10} + 29a^5b^9 - 20a^6b^8 + 10a^7b^7 - 4a^8b^6 + a^9b^5 + 12a^6c^8 + 88a^7c^7 \\
&+ 72a^8c^6 - 44a^9c^5 - 28a^{10}c^4 + 12a^{11}c^3 + 20a^2b^{11}c + 98a^3b^{10}c - 228a^4b^9c + 251a^5b^8c - 96a^6b^7c - 238a^6b^7c \\
&- 200a^7b^6c + 154a^7b^6c + 100a^8b^5c - 72a^8b^5c + 112a^9b^4c + 27a^9b^4c - 68a^{10}b^3c - 6a^{10}b^3c + 8a^{11}b^2c + 8a^2b^8c^4 \\
&- 20a^2b^9c^3 + 4a^2b^{10}c^2 - 60a^3b^6c^5 + 156a^3b^7c^4 + 2a^3b^8c^3 - 222a^3b^9c^2 + 136a^4b^4c^6 - 388a^4b^5c^5 \\
&- 152a^4b^6c^4 + 856a^4b^7c^3 - 202a^4b^8c^2 - 100a^5b^2c^7 + 364a^5b^3c^6 + 394a^5b^4c^5 - 1362a^5b^5c^4 - 115a^5b^6c^3 + 63 \\
&5a^5b^7c^2 - 340a^6b^2c^6 + 904a^6b^3c^5 + 583a^6b^4c^4 - 564a^6b^5c^3 - 655a^6b^6c^2 - 399a^7b^2c^5 + 9a^7b^3c^4 + 536a^7b^4c^3 \\
&+ 612a^7b^5c^2 - 37a^8b^2c^4 - 524a^8b^3c^3 - 354a^8b^4c^2 + 239a^9b^2c^3 + 145a^9b^3c^2 - 47a^{10}b^2c^2))/a^8)*((8a^4c^6 - b^{10} \\
&+ 8a^5c^5 - b^7*(-(4ac - b^2)^3)^{1/2} + b^8c^2 - 10ab^6c^3 + 33a^2b^4c^4 - 52a^2b^6c^2 - 38a^3b^2c^5 + 96a^3b^4c^3 - 66a^4b^2c^4 \\
&+ b^5c^2*(-(4ac - b^2)^3)^{1/2} + 12ab^8c - 4ab^3c^3*(-(4ac - b^2)^3)^{1/2} + 3a^2b^4c^4*(-(4ac - b^2)^3)^{1/2} \\
&+ 4a^3b^3c^3*(-(4ac - b^2)^3)^{1/2} - 10a^2b^3c^2*(-(4ac - b^2)^3)^{1/2} + 6ab^5c*(-(4ac - b^2)^3)^{1/2}) \\
&/((2(a^8b^4 - a^6b^6 + 16a^8c^4 + 32a^9c^3 + 16a^{10}c^2 + 10a^7b^4c - 8a^9b^2c + a^6b^4c^2 - 8a^7b^2c^3 - 32a^8b^2c^2)))^{1/2} \\
&- (2048*\tan(x/2)*(4a^8b^{12} + 20b^{12}c - 4b^{13} - 4a^2b^{11} + 4a^3b^{10} - a^4b^9 + a^5b^8 + 12a^4c^9 - 44a^5c^8 + 2 \\
&a^6c^7 + 38a^7c^6 - 18a^8c^5 + 2a^9c^4 + 4b^8c^5 - 20b^9c^4 + 40b^{10}c^3 - 40b^{11}c^2 - 24ab^6c^6 + 136ab^7c^5 - 300ab^8c^4 + 3 \\
&20ab^9c^3 - 160ab^{10}c^2 - 20a^2b^{10}c + 20a^3b^9c - 92a^4b^8c - 31a^4b^8c + 168a^5b^7c + 4a^5b^7c + 2a^6b^6c - 8a^6b^6c - \\
&84a^7b^5c + 26a^8b^4c + 44a^2b^4c^7 - 300a^2b^5c^6 + 764a^2b^6c^5 - 900a^2b^7c^4 + 460a^2b^8c^3 - 44a^2b^9c^2 - 32a^3b^2c^8 \\
&+ 272a^3b^3c^7 - 840a^3b^4c^6 + 1156a^3b^5c^5 - 660a^3b^6c^4 + 72a^3b^7c^3 + 8a^3b^8c^2 + 384a^4b^2c^7 - 704a^4b^3c^6 + 541a^4b^4c^5 \\
&- 149a^4b^5c^4 + 34a^4b^6c^3 + 6a^4b^7c^2 - 204a^5b^2c^6 + 96a^5b^3c^5 + 41a^5b^4c^4 - 132a^5b^5c^3 + 82a^5b^6c^2 - 90a^6b^2c^5 \\
&+ 174a^6b^3c^4 - 104a^6b^4c^3 + 8a^6b^5c^2 + 82a^7b^2c^4 - 40a^7b^3c^3 + 20a^7b^4c^2 - 16a^8b^2c^3 + 24ab^{11}c
\end{aligned}$$



$$\begin{aligned}
& ))/a^8)*((8*a^4*c^6 - b^{10} + 8*a^5*c^5 - b^7*(-(4*a*c - b^2)^3)^{(1/2)} + b^8 \\
& *c^2 - 10*a*b^6*c^3 + 33*a^2*b^4*c^4 - 52*a^2*b^6*c^2 - 38*a^3*b^2*c^5 + 96 \\
& *a^3*b^4*c^3 - 66*a^4*b^2*c^4 + b^5*c^2*(-(4*a*c - b^2)^3)^{(1/2)} + 12*a*b^8 \\
& *c - 4*a*b^3*c^3*(-(4*a*c - b^2)^3)^{(1/2)} + 3*a^2*b*c^4*(-(4*a*c - b^2)^3)^{(1/2)} \\
& (1/2) + 4*a^3*b*c^3*(-(4*a*c - b^2)^3)^{(1/2)} - 10*a^2*b^3*c^2*(-(4*a*c - b^ \\
& 2)^3)^{(1/2)} + 6*a*b^5*c*(-(4*a*c - b^2)^3)^{(1/2)})/(2*(a^8*b^4 - a^6*b^6 + 1 \\
& 6*a^8*c^4 + 32*a^9*c^3 + 16*a^10*c^2 + 10*a^7*b^4*c - 8*a^9*b^2*c + a^6*b^4 \\
& *c^2 - 8*a^7*b^2*c^3 - 32*a^8*b^2*c^2)))^{(1/2)} + (((((2048*(26*a^9*b^7 - 12 \\
& *a^8*b^8 - 18*a^10*b^6 + 6*a^11*b^5 - 2*a^12*b^4 + 48*a^10*c^6 + 176*a^11*c \\
& ^5 + 176*a^12*c^4 + 16*a^13*c^3 - 32*a^14*c^2 + 20*a^8*b^7*c + 74*a^9*b^6*c \\
& - 144*a^10*b*c^5 - 192*a^10*b^5*c - 352*a^11*b*c^4 + 122*a^11*b^4*c - 144* \\
& a^12*b*c^3 - 40*a^12*b^3*c + 64*a^13*b*c^2 + 16*a^13*b^2*c + 8*a^8*b^4*c^4 \\
& - 20*a^8*b^5*c^3 + 4*a^8*b^6*c^2 - 44*a^9*b^2*c^5 + 116*a^9*b^3*c^4 + 10*a^ \\
& 9*b^4*c^3 - 182*a^9*b^5*c^2 - 148*a^10*b^2*c^4 + 496*a^10*b^3*c^3 - 50*a^10 \\
& *b^4*c^2 - 260*a^11*b^2*c^3 + 388*a^11*b^3*c^2 - 204*a^12*b^2*c^2)))/a^8 + ( \\
& 2048*\tan(x/2)*((8*a^4*c^6 - b^{10} + 8*a^5*c^5 - b^7*(-(4*a*c - b^2)^3)^{(1/2)} \\
& + b^8*c^2 - 10*a*b^6*c^3 + 33*a^2*b^4*c^4 - 52*a^2*b^6*c^2 - 38*a^3*b^2*c^ \\
& 5 + 96*a^3*b^4*c^3 - 66*a^4*b^2*c^4 + b^5*c^2*(-(4*a*c - b^2)^3)^{(1/2)} + 12 \\
& *a*b^8*c - 4*a*b^3*c^3*(-(4*a*c - b^2)^3)^{(1/2)} + 3*a^2*b*c^4*(-(4*a*c - b^ \\
& 2)^3)^{(1/2)} + 4*a^3*b*c^3*(-(4*a*c - b^2)^3)^{(1/2)} - 10*a^2*b^3*c^2*(-(4*a* \\
& c - b^2)^3)^{(1/2)} + 6*a*b^5*c*(-(4*a*c - b^2)^3)^{(1/2)})/(2*(a^8*b^4 - a^6*b \\
& ^6 + 16*a^8*c^4 + 32*a^9*c^3 + 16*a^10*c^2 + 10*a^7*b^4*c - 8*a^9*b^2*c + a \\
& ^6*b^4*c^2 - 8*a^7*b^2*c^3 - 32*a^8*b^2*c^2)))^{(1/2)}*(32*a^16*c + 8*a^10*b^ \\
& 7 - 24*a^11*b^6 + 32*a^12*b^5 - 32*a^13*b^4 + 24*a^14*b^3 - 8*a^15*b^2 + 96 \\
& *a^12*c^5 + 64*a^13*c^4 - 128*a^14*c^3 - 64*a^15*c^2 - 8*a^10*b^6*c - 56*a^ \\
& 11*b^5*c - 32*a^12*b*c^4 + 184*a^12*b^4*c + 352*a^13*b*c^3 - 200*a^13*b^3*c \\
& + 288*a^14*b*c^2 + 144*a^14*b^2*c + 8*a^10*b^4*c^3 - 8*a^10*b^5*c^2 - 56*a \\
& ^11*b^2*c^4 + 40*a^11*b^3*c^3 + 96*a^11*b^4*c^2 - 272*a^12*b^2*c^3 + 8*a^12 \\
& *b^3*c^2 - 320*a^13*b^2*c^2 - 96*a^15*b*c))/a^8)*((8*a^4*c^6 - b^{10} + 8*a^5 \\
& *c^5 - b^7*(-(4*a*c - b^2)^3)^{(1/2)} + b^8*c^2 - 10*a*b^6*c^3 + 33*a^2*b^4*c \\
& ^4 - 52*a^2*b^6*c^2 - 38*a^3*b^2*c^5 + 96*a^3*b^4*c^3 - 66*a^4*b^2*c^4 + b^ \\
& 5*c^2*(-(4*a*c - b^2)^3)^{(1/2)} + 12*a*b^8*c - 4*a*b^3*c^3*(-(4*a*c - b^2)^3 \\
& )^{(1/2)} + 3*a^2*b*c^4*(-(4*a*c - b^2)^3)^{(1/2)} + 4*a^3*b*c^3*(-(4*a*c - b^2 \\
& )^3)^{(1/2)} - 10*a^2*b^3*c^2*(-(4*a*c - b^2)^3)^{(1/2)} + 6*a*b^5*c*(-(4*a*c - \\
& b^2)^3)^{(1/2)})/(2*(a^8*b^4 - a^6*b^6 + 16*a^8*c^4 + 32*a^9*c^3 + 16*a^10*c \\
& ^2 + 10*a^7*b^4*c - 8*a^9*b^2*c + a^6*b^4*c^2 - 8*a^7*b^2*c^3 - 32*a^8*b^2* \\
& c^2)))^{(1/2)} - (2048*\tan(x/2)*(8*a^14*c + 8*a^4*b^11 - 24*a^5*b^10 + 36*a^6 \\
& *b^9 - 52*a^7*b^8 + 61*a^8*b^7 - 49*a^9*b^6 + 33*a^10*b^5 - 17*a^11*b^4 + 6 \\
& *a^12*b^3 - 2*a^13*b^2 + 72*a^8*c^7 - 136*a^9*c^6 - 192*a^10*c^5 + 168*a^11 \\
& *c^4 + 80*a^12*c^3 - 64*a^13*c^2 - 8*a^4*b^10*c - 72*a^5*b^9*c + 244*a^6*b^ \\
& 8*c - 308*a^7*b^7*c - 88*a^8*b*c^6 + 375*a^8*b^6*c + 496*a^9*b*c^5 - 416*a^ \\
& 9*b^5*c - 16*a^10*b*c^4 + 295*a^10*b^4*c - 328*a^11*b*c^3 - 178*a^11*b^3*c \\
& + 184*a^12*b*c^2 + 84*a^12*b^2*c + 8*a^4*b^8*c^3 - 8*a^4*b^9*c^2 - 72*a^5*b \\
& ^6*c^4 + 56*a^5*b^7*c^3 + 112*a^5*b^8*c^2 + 220*a^6*b^4*c^5 - 140*a^6*b^5*c \\
& ^4 - 424*a^6*b^6*c^3 + 80*a^6*b^7*c^2 - 256*a^7*b^2*c^6 + 192*a^7*b^3*c^5 +
\end{aligned}$$

$$\begin{aligned}
& 416a^7b^4c^4 + 572a^7b^5c^3 - 732a^7b^6c^2 + 64a^8b^2c^5 - 115 \\
& 2a^8b^3c^4 + 521a^8b^4c^3 + 779a^8b^5c^2 + 234a^9b^2c^4 - 494a \\
& ^9b^3c^3 - 723a^9b^4c^2 + 180a^{10}b^2c^3 + 770a^{10}b^3c^2 - 416a^ \\
& ^{11}b^2c^2 - 24a^{13}b^3c) / a^8) * ((8a^4c^6 - b^{10} + 8a^5c^5 - b^7 * (-4a \\
& *c - b^2)^3)^{(1/2)} + b^8c^2 - 10a*b^6c^3 + 33a^2b^4c^4 - 52a^2 \\
& b^6c^2 - 38a^3b^2c^5 + 96a^3b^4c^3 - 66a^4b^2c^4 + b^5c^2 * (-4a*c - \\
& b^2)^3)^{(1/2)} + 12a*b^8c - 4a*b^3c^3 * (-4a*c - b^2)^3)^{(1/2)} + 3a^2b \\
& *c^4 * (-4a*c - b^2)^3)^{(1/2)} + 4a^3b*c^3 * (-4a*c - b^2)^3)^{(1/2)} - 10a \\
& ^2b^3c^2 * (-4a*c - b^2)^3)^{(1/2)} + 6a*b^5c * (-4a*c - b^2)^3)^{(1/2)) / ( \\
& 2*(a^8b^4 - a^6b^6 + 16a^8c^4 + 32a^9c^3 + 16a^{10}c^2 + 10a^7b^4c \\
& - 8a^9b^2c + a^6b^4c^2 - 8a^7b^2c^3 - 32a^8b^2c^2)))^{(1/2)} - (2 \\
& 048*(26a^3b^{11} - 12a^2b^{12} - 30a^4b^{10} + 29a^5b^9 - 20a^6b^8 + 10 \\
& *a^7b^7 - 4a^8b^6 + a^9b^5 + 12a^6c^8 + 88a^7c^7 + 72a^8c^6 - 44* \\
& a^9c^5 - 28a^{10}c^4 + 12a^{11}c^3 + 20a^2b^{11}c + 98a^3b^{10}c - 228a \\
& ^4b^9c + 251a^5b^8c - 96a^6b^7c - 238a^6b^7c - 200a^7b^6c^6 + 1 \\
& 54a^7b^6c + 100a^8b^5c - 72a^8b^5c + 112a^9b^4c + 27a^9b^4c \\
& - 68a^{10}b^3c - 6a^{10}b^3c + 8a^{11}b^2c^2 + 8a^2b^8c^4 - 20a^2b^9c \\
& ^3 + 4a^2b^{10}c^2 - 60a^3b^6c^5 + 156a^3b^7c^4 + 2a^3b^8c^3 - 2 \\
& 22a^3b^9c^2 + 136a^4b^4c^6 - 388a^4b^5c^5 - 152a^4b^6c^4 + 856* \\
& a^4b^7c^3 - 202a^4b^8c^2 - 100a^5b^2c^7 + 364a^5b^3c^6 + 394a^5 \\
& *b^4c^5 - 1362a^5b^5c^4 - 115a^5b^6c^3 + 635a^5b^7c^2 - 340a^6b \\
& ^2c^6 + 904a^6b^3c^5 + 583a^6b^4c^4 - 564a^6b^5c^3 - 655a^6b^6c \\
& ^2 - 399a^7b^2c^5 + 9a^7b^3c^4 + 536a^7b^4c^3 + 612a^7b^5c^2 - \\
& 37a^8b^2c^4 - 524a^8b^3c^3 - 354a^8b^4c^2 + 239a^9b^2c^3 + 145 \\
& *a^9b^3c^2 - 47a^{10}b^2c^2) / a^8) * ((8a^4c^6 - b^{10} + 8a^5c^5 - b^7 * \\
& (-4a*c - b^2)^3)^{(1/2)} + b^8c^2 - 10a*b^6c^3 + 33a^2b^4c^4 - 52a^2 \\
& *b^6c^2 - 38a^3b^2c^5 + 96a^3b^4c^3 - 66a^4b^2c^4 + b^5c^2 * (-4a \\
& *c - b^2)^3)^{(1/2)} + 12a*b^8c - 4a*b^3c^3 * (-4a*c - b^2)^3)^{(1/2)} + 3 \\
& *a^2b*c^4 * (-4a*c - b^2)^3)^{(1/2)} + 4a^3b*c^3 * (-4a*c - b^2)^3)^{(1/2)} \\
& - 10a^2b^3c^2 * (-4a*c - b^2)^3)^{(1/2)} + 6a*b^5c * (-4a*c - b^2)^3)^{(1 \\
& /2)) / (2*(a^8b^4 - a^6b^6 + 16a^8c^4 + 32a^9c^3 + 16a^{10}c^2 + 10a^7 \\
& *b^4c - 8a^9b^2c + a^6b^4c^2 - 8a^7b^2c^3 - 32a^8b^2c^2)))^{(1/2)} \\
& ) + (2048*\tan(x/2)*(4a*b^{12} + 20b^{12}c - 4b^{13} - 4a^2b^{11} + 4a^3b^{10} \\
& - a^4b^9 + a^5b^8 + 12a^4c^9 - 44a^5c^8 + 2a^6c^7 + 38a^7c^6 - 1 \\
& 8a^8c^5 + 2a^9c^4 + 4b^8c^5 - 20b^9c^4 + 40b^{10}c^3 - 40b^{11}c^2 \\
& - 24a*b^6c^6 + 136a*b^7c^5 - 300a*b^8c^4 + 320a*b^9c^3 - 160a*b^{10} \\
& *c^2 - 20a^2b^{10}c + 20a^3b^9c - 92a^4b^8c - 31a^4b^8c + 168a^5 \\
& *b^7c^7 + 4a^5b^7c + 2a^6b^6c - 8a^6b^6c - 84a^7b^5c^5 + 26a^8b^4 \\
& *c^4 + 44a^2b^4c^7 - 300a^2b^5c^6 + 764a^2b^6c^5 - 900a^2b^7c^4 \\
& + 460a^2b^8c^3 - 44a^2b^9c^2 - 32a^3b^2c^8 + 272a^3b^3c^7 - 840 \\
& *a^3b^4c^6 + 1156a^3b^5c^5 - 660a^3b^6c^4 + 72a^3b^7c^3 + 8a^3* \\
& b^8c^2 + 384a^4b^2c^7 - 704a^4b^3c^6 + 541a^4b^4c^5 - 149a^4b^5 \\
& *c^4 + 34a^4b^6c^3 + 6a^4b^7c^2 - 204a^5b^2c^6 + 96a^5b^3c^5 + \\
& 41a^5b^4c^4 - 132a^5b^5c^3 + 82a^5b^6c^2 - 90a^6b^2c^5 + 174a^6 \\
& *b^3c^4 - 104a^6b^4c^3 + 8a^6b^5c^2 + 82a^7b^2c^4 - 40a^7b^3c
\end{aligned}$$

$$\begin{aligned}
&^3 + 20a^7b^4c^2 - 16a^8b^2c^3 + 24a^*b^{11}c)) / a^8 * ((8a^4c^6 - b^{10} \\
&0 + 8a^5c^5 - b^7 * (-4ac - b^2)^3)^{1/2} + b^8c^2 - 10ab^6c^3 + 33a^2b^4c^4 \\
&- 52a^2b^6c^2 - 38a^3b^2c^5 + 96a^3b^4c^3 - 66a^4b^2c^4 + b^5c^2 * (-4ac - b^2)^3)^{1/2} \\
&+ 12ab^8c - 4ab^3c^3 * (-4ac - b^2)^3)^{1/2} + 3a^2b^4c * (-4ac - b^2)^3)^{1/2} \\
&+ 4a^3b^3c^3 * (-4ac - b^2)^3)^{1/2} - 10a^2b^3c^2 * (-4ac - b^2)^3)^{1/2} + 6ab^5c * (-4ac - b^2)^3)^{1/2} \\
&+ 3a^2b^4c * (-4ac - b^2)^3)^{1/2} + 4a^3b^3c^3 * (-4ac - b^2)^3)^{1/2} - 10a^2b^3c^2 * (-4ac - b^2)^3)^{1/2} \\
&+ 6ab^5c * (-4ac - b^2)^3)^{1/2} / (2(a^8b^4 - a^6b^6 + 16a^8c^4 + 32a^9c^3 + 16a^10c^2 \\
&+ 10a^7b^4c - 8a^9b^2c + a^6b^4c^2 - 8a^7b^2c^3 - 32a^8b^2c^2))^{1/2} * ((8a^4c^6 - b^{10} \\
&+ 8a^5c^5 - b^7 * (-4ac - b^2)^3)^{1/2} + b^8c^2 - 10ab^6c^3 + 33a^2b^4c^4 - 52a^2b^6c^2 \\
&- 38a^3b^2c^5 + 96a^3b^4c^3 - 66a^4b^2c^4 + b^5c^2 * (-4ac - b^2)^3)^{1/2} + 12ab^8c \\
&- 4ab^3c^3 * (-4ac - b^2)^3)^{1/2} + 3a^2b^4c * (-4ac - b^2)^3)^{1/2} + 4a^3b^3c^3 * (-4ac - b^2)^3)^{1/2} \\
&- 10a^2b^3c^2 * (-4ac - b^2)^3)^{1/2} + 6ab^5c * (-4ac - b^2)^3)^{1/2} / (2(a^8b^4 - a^6b^6 \\
&+ 16a^8c^4 + 32a^9c^3 + 16a^10c^2 + 10a^7b^4c - 8a^9b^2c + a^6b^4c^2 - 8a^7b^2c^3 - 32a^8b^2c^2))^{1/2} * 2i \\
&- \operatorname{atan}(\frac{((2048 * (26a^9b^7 - 12a^8b^8 - 18a^10b^6 + 6a^11b^5 - 2a^12b^4 + 48a^10c^6 + 176a^11c^5 + 176a^12c^4 + 16a^13c^3 - 32a^14c^2 + 20a^8b^7c + 74a^9b^6c - 144a^10b^5c - 192a^10b^5c - 352a^11b^4c + 122a^11b^4c - 144a^12b^3c - 40a^12b^3c + 64a^13b^2c + 16a^13b^2c + 8a^8b^4c^4 - 20a^8b^5c^3 + 4a^8b^6c^2 - 44a^9b^2c^5 + 116a^9b^3c^4 + 10a^9b^4c^3 - 182a^9b^5c^2 - 148a^10b^2c^4 + 496a^10b^3c^3 - 50a^10b^4c^2 - 260a^11b^2c^3 + 388a^11b^3c^2 - 204a^12b^2c^2)) / a^8 - (2048 * \tan(x/2) * (-b^{10} - 8a^4c^6 - 8a^5c^5 - b^7 * (-4ac - b^2)^3)^{1/2} - b^8c^2 + 10ab^6c^3 - 33a^2b^4c^4 + 52a^2b^6c^2 + 38a^3b^2c^5 - 96a^3b^4c^3 + 66a^4b^2c^4 + b^5c^2 * (-4ac - b^2)^3)^{1/2} - 12ab^8c - 4ab^3c^3 * (-4ac - b^2)^3)^{1/2} + 3a^2b^4c * (-4ac - b^2)^3)^{1/2} + 4a^3b^3c^3 * (-4ac - b^2)^3)^{1/2} - 10a^2b^3c^2 * (-4ac - b^2)^3)^{1/2} + 6ab^5c * (-4ac - b^2)^3)^{1/2}}{(2(a^8b^4 - a^6b^6 + 16a^8c^4 + 32a^9c^3 + 16a^10c^2 + 10a^7b^4c - 8a^9b^2c + a^6b^4c^2 - 8a^7b^2c^3 - 32a^8b^2c^2))^{1/2}} * (32a^{16}c + 8a^{10}b^7 - 24a^{11}b^6 + 32a^{12}b^5 - 32a^{13}b^4 + 24a^{14}b^3 - 8a^{15}b^2 + 96a^{12}c^5 + 64a^{13}c^4 - 128a^{14}c^3 - 64a^{15}c^2 - 8a^{10}b^6c - 56a^{11}b^5c - 32a^{12}b^4c + 184a^{12}b^4c + 352a^{13}b^3c - 200a^{13}b^3c + 288a^{14}b^2c + 144a^{14}b^2c + 8a^{10}b^4c^3 - 8a^{10}b^5c^2 - 56a^{11}b^2c^4 + 40a^{11}b^3c^3 + 96a^{11}b^4c^2 - 272a^{12}b^2c^3 + 8a^{12}b^3c^2 - 320a^{13}b^2c^2 - 96a^{15}b^2c)) / a^8 * (-b^{10} - 8a^4c^6 - 8a^5c^5 - b^7 * (-4ac - b^2)^3)^{1/2} - b^8c^2 + 10ab^6c^3 - 33a^2b^4c^4 + 52a^2b^6c^2 + 38a^3b^2c^5 - 96a^3b^4c^3 + 66a^4b^2c^4 + b^5c^2 * (-4ac - b^2)^3)^{1/2} - 12ab^8c - 4ab^3c^3 * (-4ac - b^2)^3)^{1/2} + 3a^2b^4c * (-4ac - b^2)^3)^{1/2} + 4a^3b^3c^3 * (-4ac - b^2)^3)^{1/2} - 10a^2b^3c^2 * (-4ac - b^2)^3)^{1/2} + 6ab^5c * (-4ac - b^2)^3)^{1/2} / (2(a^8b^4 - a^6b^6 + 16a^8c^4 + 32a^9c^3 + 16a^10c^2 + 10a^7b^4c - 8a^9b^2c + a^6b^4c^2 - 8a^7b^2c^3 - 32a^8b^2c^2))^{1/2} + (2048 * \tan(x/2) * (8a^{14}c + 8a^4 *
\end{aligned}$$

$$\begin{aligned}
& b^{11} - 24a^5b^{10} + 36a^6b^9 - 52a^7b^8 + 61a^8b^7 - 49a^9b^6 + 33 \\
& a^{10}b^5 - 17a^{11}b^4 + 6a^{12}b^3 - 2a^{13}b^2 + 72a^8c^7 - 136a^9c^6 \\
& - 192a^{10}c^5 + 168a^{11}c^4 + 80a^{12}c^3 - 64a^{13}c^2 - 8a^4b^{10}c \\
& - 72a^5b^9c + 244a^6b^8c - 308a^7b^7c - 88a^8b^6c + 375a^8b^6 \\
& *c + 496a^9b^5c^5 - 416a^9b^5c - 16a^{10}b^4c^4 + 295a^{10}b^4c - 328a \\
& ^{11}b^3c^3 - 178a^{11}b^3c + 184a^{12}b^2c^2 + 84a^{12}b^2c + 8a^4b^8c^3 \\
& - 8a^4b^9c^2 - 72a^5b^6c^4 + 56a^5b^7c^3 + 112a^5b^8c^2 + 220a \\
& ^6b^4c^5 - 140a^6b^5c^4 - 424a^6b^6c^3 + 80a^6b^7c^2 - 256a^7b \\
& ^2c^6 + 192a^7b^3c^5 + 416a^7b^4c^4 + 572a^7b^5c^3 - 732a^7b^6 \\
& *c^2 + 64a^8b^2c^5 - 1152a^8b^3c^4 + 521a^8b^4c^3 + 779a^8b^5c^ \\
& ^2 + 234a^9b^2c^4 - 494a^9b^3c^3 - 723a^9b^4c^2 + 180a^{10}b^2c^3 \\
& + 770a^{10}b^3c^2 - 416a^{11}b^2c^2 - 24a^{13}b^2c^2)/a^8)*(-(b^{10} - 8a^4c \\
& ^6 - 8a^5c^5 - b^7*(-(4a*c - b^2)^3)^{(1/2)} - b^8c^2 + 10a*b^6c^3 - 3 \\
& 3a^2b^4c^4 + 52a^2b^6c^2 + 38a^3b^2c^5 - 96a^3b^4c^3 + 66a^4b \\
& ^2c^4 + b^5c^2*(-(4a*c - b^2)^3)^{(1/2)} - 12a*b^8c - 4a*b^3c^3*(-(4a \\
& *c - b^2)^3)^{(1/2)} + 3a^2b*c^4*(-(4a*c - b^2)^3)^{(1/2)} + 4a^3b*c^3*(-( \\
& 4a*c - b^2)^3)^{(1/2)} - 10a^2b^3c^2*(-(4a*c - b^2)^3)^{(1/2)} + 6a*b^5c \\
& *(-(4a*c - b^2)^3)^{(1/2)})/(2*(a^8b^4 - a^6b^6 + 16a^8c^4 + 32a^9c^3 \\
& + 16a^{10}c^2 + 10a^7b^4c - 8a^9b^2c + a^6b^4c^2 - 8a^7b^2c^3 - \\
& 32a^8b^2c^2)))^{(1/2)} - (2048*(26a^3b^{11} - 12a^2b^{12} - 30a^4b^{10} + \\
& 29a^5b^9 - 20a^6b^8 + 10a^7b^7 - 4a^8b^6 + a^9b^5 + 12a^6c^8 + 8 \\
& 8a^7c^7 + 72a^8c^6 - 44a^9c^5 - 28a^{10}c^4 + 12a^{11}c^3 + 20a^2b^ \\
& ^{11}c + 98a^3b^{10}c - 228a^4b^9c + 251a^5b^8c - 96a^6b^7c - 238a \\
& ^6b^7c - 200a^7b^6c + 154a^7b^6c + 100a^8b^5c - 72a^8b^5c + 1 \\
& 12a^9b^4c + 27a^9b^4c - 68a^{10}b^3c - 6a^{10}b^3c + 8a^{11}b^2c + \\
& 8a^2b^8c^4 - 20a^2b^9c^3 + 4a^2b^{10}c^2 - 60a^3b^6c^5 + 156a^3 \\
& *b^7c^4 + 2a^3b^8c^3 - 222a^3b^9c^2 + 136a^4b^4c^6 - 388a^4b^5c \\
& ^5 - 152a^4b^6c^4 + 856a^4b^7c^3 - 202a^4b^8c^2 - 100a^5b^2c^7 \\
& + 364a^5b^3c^6 + 394a^5b^4c^5 - 1362a^5b^5c^4 - 115a^5b^6c^3 + \\
& 635a^5b^7c^2 - 340a^6b^2c^6 + 904a^6b^3c^5 + 583a^6b^4c^4 - 56 \\
& 4a^6b^5c^3 - 655a^6b^6c^2 - 399a^7b^2c^5 + 9a^7b^3c^4 + 536a^7 \\
& *b^4c^3 + 612a^7b^5c^2 - 37a^8b^2c^4 - 524a^8b^3c^3 - 354a^8b^4 \\
& *c^2 + 239a^9b^2c^3 + 145a^9b^3c^2 - 47a^{10}b^2c^2))/a^8)*(-(b^{10} - \\
& 8a^4c^6 - 8a^5c^5 - b^7*(-(4a*c - b^2)^3)^{(1/2)} - b^8c^2 + 10a*b^6c \\
& ^3 - 33a^2b^4c^4 + 52a^2b^6c^2 + 38a^3b^2c^5 - 96a^3b^4c^3 + 6 \\
& 6a^4b^2c^4 + b^5c^2*(-(4a*c - b^2)^3)^{(1/2)} - 12a*b^8c - 4a*b^3c^3 \\
& *(-(4a*c - b^2)^3)^{(1/2)} + 3a^2b*c^4*(-(4a*c - b^2)^3)^{(1/2)} + 4a^3b* \\
& c^3*(-(4a*c - b^2)^3)^{(1/2)} - 10a^2b^3c^2*(-(4a*c - b^2)^3)^{(1/2)} + 6* \\
& a*b^5c*(-(4a*c - b^2)^3)^{(1/2)})/(2*(a^8b^4 - a^6b^6 + 16a^8c^4 + 32a \\
& ^9c^3 + 16a^{10}c^2 + 10a^7b^4c - 8a^9b^2c + a^6b^4c^2 - 8a^7b^2 \\
& *c^3 - 32a^8b^2c^2)))^{(1/2)} - (2048*\tan(x/2)*(4a*b^{12} + 20b^{12}c - 4b \\
& ^{13} - 4a^2b^{11} + 4a^3b^{10} - a^4b^9 + a^5b^8 + 12a^4c^9 - 44a^5c^8 \\
& + 2a^6c^7 + 38a^7c^6 - 18a^8c^5 + 2a^9c^4 + 4b^8c^5 - 20b^9c^4 \\
& + 40b^{10}c^3 - 40b^{11}c^2 - 24a*b^6c^6 + 136a*b^7c^5 - 300a*b^8c^4 \\
& + 320a*b^9c^3 - 160a*b^{10}c^2 - 20a^2b^{10}c + 20a^3b^9c - 92a^4b
\end{aligned}$$

$$\begin{aligned}
& *c^8 - 31*a^4*b^8*c + 168*a^5*b*c^7 + 4*a^5*b^7*c + 2*a^6*b*c^6 - 8*a^6*b^6 \\
& *c - 84*a^7*b*c^5 + 26*a^8*b*c^4 + 44*a^2*b^4*c^7 - 300*a^2*b^5*c^6 + 764*a \\
& ^2*b^6*c^5 - 900*a^2*b^7*c^4 + 460*a^2*b^8*c^3 - 44*a^2*b^9*c^2 - 32*a^3*b^ \\
& 2*c^8 + 272*a^3*b^3*c^7 - 840*a^3*b^4*c^6 + 1156*a^3*b^5*c^5 - 660*a^3*b^6* \\
& c^4 + 72*a^3*b^7*c^3 + 8*a^3*b^8*c^2 + 384*a^4*b^2*c^7 - 704*a^4*b^3*c^6 + \\
& 541*a^4*b^4*c^5 - 149*a^4*b^5*c^4 + 34*a^4*b^6*c^3 + 6*a^4*b^7*c^2 - 204*a^ \\
& 5*b^2*c^6 + 96*a^5*b^3*c^5 + 41*a^5*b^4*c^4 - 132*a^5*b^5*c^3 + 82*a^5*b^6* \\
& c^2 - 90*a^6*b^2*c^5 + 174*a^6*b^3*c^4 - 104*a^6*b^4*c^3 + 8*a^6*b^5*c^2 + \\
& 82*a^7*b^2*c^4 - 40*a^7*b^3*c^3 + 20*a^7*b^4*c^2 - 16*a^8*b^2*c^3 + 24*a*b^ \\
& 11*c)) / a^8 * (- (b^10 - 8*a^4*c^6 - 8*a^5*c^5 - b^7 * (- (4*a*c - b^2)^3)^{1/2}) \\
& - b^8*c^2 + 10*a*b^6*c^3 - 33*a^2*b^4*c^4 + 52*a^2*b^6*c^2 + 38*a^3*b^2*c^5 \\
& - 96*a^3*b^4*c^3 + 66*a^4*b^2*c^4 + b^5*c^2 * (- (4*a*c - b^2)^3)^{1/2} - 12* \\
& a*b^8*c - 4*a*b^3*c^3 * (- (4*a*c - b^2)^3)^{1/2} + 3*a^2*b*c^4 * (- (4*a*c - b^2 \\
& )^3)^{1/2} + 4*a^3*b*c^3 * (- (4*a*c - b^2)^3)^{1/2} - 10*a^2*b^3*c^2 * (- (4*a*c \\
& - b^2)^3)^{1/2} + 6*a*b^5*c * (- (4*a*c - b^2)^3)^{1/2}) / (2*(a^8*b^4 - a^6*b^ \\
& 6 + 16*a^8*c^4 + 32*a^9*c^3 + 16*a^10*c^2 + 10*a^7*b^4*c - 8*a^9*b^2*c + a^ \\
& 6*b^4*c^2 - 8*a^7*b^2*c^3 - 32*a^8*b^2*c^2)))^{1/2} * i - (((((2048*(26*a^9* \\
& b^7 - 12*a^8*b^8 - 18*a^10*b^6 + 6*a^11*b^5 - 2*a^12*b^4 + 48*a^10*c^6 + 17 \\
& 6*a^11*c^5 + 176*a^12*c^4 + 16*a^13*c^3 - 32*a^14*c^2 + 20*a^8*b^7*c + 74*a \\
& ^9*b^6*c - 144*a^10*b*c^5 - 192*a^10*b^5*c - 352*a^11*b*c^4 + 122*a^11*b^4* \\
& c - 144*a^12*b*c^3 - 40*a^12*b^3*c + 64*a^13*b*c^2 + 16*a^13*b^2*c + 8*a^8* \\
& b^4*c^4 - 20*a^8*b^5*c^3 + 4*a^8*b^6*c^2 - 44*a^9*b^2*c^5 + 116*a^9*b^3*c^4 \\
& + 10*a^9*b^4*c^3 - 182*a^9*b^5*c^2 - 148*a^10*b^2*c^4 + 496*a^10*b^3*c^3 - \\
& 50*a^10*b^4*c^2 - 260*a^11*b^2*c^3 + 388*a^11*b^3*c^2 - 204*a^12*b^2*c^2)) \\
& / a^8 + (2048 * \tan(x/2) * (- (b^10 - 8*a^4*c^6 - 8*a^5*c^5 - b^7 * (- (4*a*c - b^2) \\
& ^3)^{1/2}) - b^8*c^2 + 10*a*b^6*c^3 - 33*a^2*b^4*c^4 + 52*a^2*b^6*c^2 + 38*a \\
& ^3*b^2*c^5 - 96*a^3*b^4*c^3 + 66*a^4*b^2*c^4 + b^5*c^2 * (- (4*a*c - b^2)^3)^{1/2} \\
& - 12*a*b^8*c - 4*a*b^3*c^3 * (- (4*a*c - b^2)^3)^{1/2} + 3*a^2*b*c^4 * (- (4 \\
& *a*c - b^2)^3)^{1/2} + 4*a^3*b*c^3 * (- (4*a*c - b^2)^3)^{1/2} - 10*a^2*b^3*c^ \\
& 2 * (- (4*a*c - b^2)^3)^{1/2} + 6*a*b^5*c * (- (4*a*c - b^2)^3)^{1/2}) / (2*(a^8*b^ \\
& 4 - a^6*b^6 + 16*a^8*c^4 + 32*a^9*c^3 + 16*a^10*c^2 + 10*a^7*b^4*c - 8*a^9* \\
& b^2*c + a^6*b^4*c^2 - 8*a^7*b^2*c^3 - 32*a^8*b^2*c^2)))^{1/2} * (32*a^16*c + \\
& 8*a^10*b^7 - 24*a^11*b^6 + 32*a^12*b^5 - 32*a^13*b^4 + 24*a^14*b^3 - 8*a^15 \\
& *b^2 + 96*a^12*c^5 + 64*a^13*c^4 - 128*a^14*c^3 - 64*a^15*c^2 - 8*a^10*b^6* \\
& c - 56*a^11*b^5*c - 32*a^12*b*c^4 + 184*a^12*b^4*c + 352*a^13*b*c^3 - 200*a \\
& ^13*b^3*c + 288*a^14*b*c^2 + 144*a^14*b^2*c + 8*a^10*b^4*c^3 - 8*a^10*b^5*c \\
& ^2 - 56*a^11*b^2*c^4 + 40*a^11*b^3*c^3 + 96*a^11*b^4*c^2 - 272*a^12*b^2*c^3 \\
& + 8*a^12*b^3*c^2 - 320*a^13*b^2*c^2 - 96*a^15*b*c)) / a^8 * (- (b^10 - 8*a^4*c \\
& ^6 - 8*a^5*c^5 - b^7 * (- (4*a*c - b^2)^3)^{1/2}) - b^8*c^2 + 10*a*b^6*c^3 - 33 \\
& *a^2*b^4*c^4 + 52*a^2*b^6*c^2 + 38*a^3*b^2*c^5 - 96*a^3*b^4*c^3 + 66*a^4*b^ \\
& 2*c^4 + b^5*c^2 * (- (4*a*c - b^2)^3)^{1/2} - 12*a*b^8*c - 4*a*b^3*c^3 * (- (4*a* \\
& c - b^2)^3)^{1/2} + 3*a^2*b*c^4 * (- (4*a*c - b^2)^3)^{1/2} + 4*a^3*b*c^3 * (- (4 \\
& *a*c - b^2)^3)^{1/2} - 10*a^2*b^3*c^2 * (- (4*a*c - b^2)^3)^{1/2} + 6*a*b^5*c * \\
& (- (4*a*c - b^2)^3)^{1/2}) / (2*(a^8*b^4 - a^6*b^6 + 16*a^8*c^4 + 32*a^9*c^3 + \\
& 16*a^10*c^2 + 10*a^7*b^4*c - 8*a^9*b^2*c + a^6*b^4*c^2 - 8*a^7*b^2*c^3 - 3
\end{aligned}$$

$$\begin{aligned}
& 2*a^8*b^2*c^2)))^{(1/2)} - (2048*\tan(x/2)*(8*a^{14}*c + 8*a^4*b^{11} - 24*a^5*b^{10} \\
& 0 + 36*a^6*b^9 - 52*a^7*b^8 + 61*a^8*b^7 - 49*a^9*b^6 + 33*a^{10}*b^5 - 17*a^{11}*b^4 + 6*a^{12}*b^3 - 2*a^{13}*b^2 + 72*a^8*c^7 - 136*a^9*c^6 - 192*a^{10}*c^5 \\
& + 168*a^{11}*c^4 + 80*a^{12}*c^3 - 64*a^{13}*c^2 - 8*a^4*b^{10}*c - 72*a^5*b^9*c + 244*a^6*b^8*c - 308*a^7*b^7*c - 88*a^8*b^6*c + 375*a^8*b^6*c + 496*a^9*b^5*c^5 - 416*a^9*b^5*c - 16*a^{10}*b^4*c^4 + 295*a^{10}*b^4*c - 328*a^{11}*b^3*c^3 - 178*a^{11}*b^3*c + 184*a^{12}*b^2*c^2 + 84*a^{12}*b^2*c + 8*a^4*b^8*c^3 - 8*a^4*b^9*c^2 - 72*a^5*b^6*c^4 + 56*a^5*b^7*c^3 + 112*a^5*b^8*c^2 + 220*a^6*b^4*c^5 - 140*a^6*b^5*c^4 - 424*a^6*b^6*c^3 + 80*a^6*b^7*c^2 - 256*a^7*b^2*c^6 + 192*a^7*b^3*c^5 + 416*a^7*b^4*c^4 + 572*a^7*b^5*c^3 - 732*a^7*b^6*c^2 + 64*a^8*b^2*c^5 - 1152*a^8*b^3*c^4 + 521*a^8*b^4*c^3 + 779*a^8*b^5*c^2 + 234*a^9*b^2*c^4 - 494*a^9*b^3*c^3 - 723*a^9*b^4*c^2 + 180*a^{10}*b^2*c^3 + 770*a^{10}*b^3*c^2 - 416*a^{11}*b^2*c^2 - 24*a^{13}*b*c)))/a^8)*(-(b^{10} - 8*a^4*c^6 - 8*a^5*c^5 - b^7*(-(4*a*c - b^2)^3)^{(1/2)} - b^8*c^2 + 10*a*b^6*c^3 - 33*a^2*b^4*c^4 + 52*a^2*b^6*c^2 + 38*a^3*b^2*c^5 - 96*a^3*b^4*c^3 + 66*a^4*b^2*c^4 + b^5*c^2*(-(4*a*c - b^2)^3)^{(1/2)} - 12*a*b^8*c - 4*a*b^3*c^3*(-(4*a*c - b^2)^3)^{(1/2)} + 3*a^2*b*c^4*(-(4*a*c - b^2)^3)^{(1/2)} + 4*a^3*b*c^3*(-(4*a*c - b^2)^3)^{(1/2)} - 10*a^2*b^3*c^2*(-(4*a*c - b^2)^3)^{(1/2)} + 6*a*b^5*c*(-(4*a*c - b^2)^3)^{(1/2)}))/(2*(a^8*b^4 - a^6*b^6 + 16*a^8*c^4 + 32*a^9*c^3 + 16*a^{10}*c^2 + 10*a^7*b^4*c - 8*a^9*b^2*c + a^6*b^4*c^2 - 8*a^7*b^2*c^3 - 32*a^8*b^2*c^2)))^{(1/2)} - (2048*(26*a^3*b^{11} - 12*a^2*b^{12} - 30*a^4*b^{10} + 29*a^5*b^9 - 20*a^6*b^8 + 10*a^7*b^7 - 4*a^8*b^6 + a^9*b^5 + 12*a^6*c^8 + 88*a^7*c^7 + 72*a^8*c^6 - 44*a^9*c^5 - 28*a^{10}*c^4 + 12*a^{11}*c^3 + 20*a^2*b^{11}*c + 98*a^3*b^{10}*c - 228*a^4*b^9*c + 251*a^5*b^8*c - 96*a^6*b^7*c - 238*a^6*b^7*c - 200*a^7*b^6*c + 154*a^7*b^6*c + 100*a^8*b^5*c - 72*a^8*b^5*c + 112*a^9*b^4*c + 27*a^9*b^4*c - 68*a^{10}*b^3*c - 6*a^{10}*b^3*c + 8*a^{11}*b^2*c + 8*a^2*b^8*c^4 - 20*a^2*b^9*c^3 + 4*a^2*b^{10}*c^2 - 60*a^3*b^6*c^5 + 156*a^3*b^7*c^4 + 2*a^3*b^8*c^3 - 222*a^3*b^9*c^2 + 136*a^4*b^4*c^6 - 388*a^4*b^5*c^5 - 152*a^4*b^6*c^4 + 856*a^4*b^7*c^3 - 202*a^4*b^8*c^2 - 100*a^5*b^2*c^7 + 364*a^5*b^3*c^6 + 394*a^5*b^4*c^5 - 1362*a^5*b^5*c^4 - 115*a^5*b^6*c^3 + 635*a^5*b^7*c^2 - 340*a^6*b^2*c^6 + 904*a^6*b^3*c^5 + 583*a^6*b^4*c^4 - 564*a^6*b^5*c^3 - 655*a^6*b^6*c^2 - 399*a^7*b^2*c^5 + 9*a^7*b^3*c^4 + 536*a^7*b^4*c^3 + 612*a^7*b^5*c^2 - 37*a^8*b^2*c^4 - 524*a^8*b^3*c^3 - 354*a^8*b^4*c^2 + 239*a^9*b^2*c^3 + 145*a^9*b^3*c^2 - 47*a^{10}*b^2*c^2))/a^8)*(-(b^{10} - 8*a^4*c^6 - 8*a^5*c^5 - b^7*(-(4*a*c - b^2)^3)^{(1/2)} - b^8*c^2 + 10*a*b^6*c^3 - 33*a^2*b^4*c^4 + 52*a^2*b^6*c^2 + 38*a^3*b^2*c^5 - 96*a^3*b^4*c^3 + 66*a^4*b^2*c^4 + b^5*c^2*(-(4*a*c - b^2)^3)^{(1/2)} - 12*a*b^8*c - 4*a*b^3*c^3*(-(4*a*c - b^2)^3)^{(1/2)} + 3*a^2*b*c^4*(-(4*a*c - b^2)^3)^{(1/2)} + 4*a^3*b*c^3*(-(4*a*c - b^2)^3)^{(1/2)} - 10*a^2*b^3*c^2*(-(4*a*c - b^2)^3)^{(1/2)} + 6*a*b^5*c*(-(4*a*c - b^2)^3)^{(1/2)}))/(2*(a^8*b^4 - a^6*b^6 + 16*a^8*c^4 + 32*a^9*c^3 + 16*a^{10}*c^2 + 10*a^7*b^4*c - 8*a^9*b^2*c + a^6*b^4*c^2 - 8*a^7*b^2*c^3 - 32*a^8*b^2*c^2)))^{(1/2)} + (2048*\tan(x/2)*(4*a*b^{12} + 20*b^{12}*c - 4*b^{13} - 4*a^2*b^{11} + 4*a^3*b^{10} - a^4*b^9 + a^5*b^8 + 12*a^4*c^9 - 44*a^5*c^8 + 2*a^6*c^7 + 38*a^7*c^6 - 18*a^8*c^5 + 2*a^9*c^4 + 4*b^8*c^5 - 20*b^9*c^4 + 40*b^{10}*c^3 - 40*b^{11}*c^2 - 24*a*b^6*c^6 + 136*a*b^7*c^5 - 300*a*b^8*c^4 + 320*a*b^9*c^3
\end{aligned}$$

$$\begin{aligned}
& - 160*a*b^{10}*c^2 - 20*a^2*b^{10}*c + 20*a^3*b^9*c - 92*a^4*b*c^8 - 31*a^4*b^8 \\
& *c + 168*a^5*b*c^7 + 4*a^5*b^7*c + 2*a^6*b*c^6 - 8*a^6*b^6*c - 84*a^7*b*c^5 \\
& + 26*a^8*b*c^4 + 44*a^2*b^4*c^7 - 300*a^2*b^5*c^6 + 764*a^2*b^6*c^5 - 900* \\
& a^2*b^7*c^4 + 460*a^2*b^8*c^3 - 44*a^2*b^9*c^2 - 32*a^3*b^2*c^8 + 272*a^3*b \\
& ^3*c^7 - 840*a^3*b^4*c^6 + 1156*a^3*b^5*c^5 - 660*a^3*b^6*c^4 + 72*a^3*b^7* \\
& c^3 + 8*a^3*b^8*c^2 + 384*a^4*b^2*c^7 - 704*a^4*b^3*c^6 + 541*a^4*b^4*c^5 - \\
& 149*a^4*b^5*c^4 + 34*a^4*b^6*c^3 + 6*a^4*b^7*c^2 - 204*a^5*b^2*c^6 + 96*a^ \\
& 5*b^3*c^5 + 41*a^5*b^4*c^4 - 132*a^5*b^5*c^3 + 82*a^5*b^6*c^2 - 90*a^6*b^2* \\
& c^5 + 174*a^6*b^3*c^4 - 104*a^6*b^4*c^3 + 8*a^6*b^5*c^2 + 82*a^7*b^2*c^4 - \\
& 40*a^7*b^3*c^3 + 20*a^7*b^4*c^2 - 16*a^8*b^2*c^3 + 24*a*b^{11}*c)) / a^8 * (- (b^ \\
& 10 - 8*a^4*c^6 - 8*a^5*c^5 - b^7 * (- (4*a*c - b^2)^3)^{1/2} - b^8*c^2 + 10*a* \\
& b^6*c^3 - 33*a^2*b^4*c^4 + 52*a^2*b^6*c^2 + 38*a^3*b^2*c^5 - 96*a^3*b^4*c^3 \\
& + 66*a^4*b^2*c^4 + b^5*c^2 * (- (4*a*c - b^2)^3)^{1/2} - 12*a*b^8*c - 4*a*b^3 \\
& *c^3 * (- (4*a*c - b^2)^3)^{1/2} + 3*a^2*b*c^4 * (- (4*a*c - b^2)^3)^{1/2} + 4*a^ \\
& 3*b*c^3 * (- (4*a*c - b^2)^3)^{1/2} - 10*a^2*b^3*c^2 * (- (4*a*c - b^2)^3)^{1/2} \\
& + 6*a*b^5*c * (- (4*a*c - b^2)^3)^{1/2}) / (2*(a^8*b^4 - a^6*b^6 + 16*a^8*c^4 + \\
& 32*a^9*c^3 + 16*a^10*c^2 + 10*a^7*b^4*c - 8*a^9*b^2*c + a^6*b^4*c^2 - 8*a^7 \\
& *b^2*c^3 - 32*a^8*b^2*c^2))^{1/2} * i) / ((4096*(14*a^3*c^9 + a^4*c^8 - 10*a^ \\
& 5*c^7 + 3*a^6*c^6 - 4*b^4*c^8 + 16*b^5*c^7 - 24*b^6*c^6 + 16*b^7*c^5 - 4*b^ \\
& 8*c^4 + 4*a*b^2*c^9 - 28*a*b^3*c^8 + 56*a*b^4*c^7 - 40*a*b^5*c^6 + 4*a*b^6* \\
& c^5 + 4*a*b^7*c^4 + 12*a^2*b*c^9 - 22*a^3*b*c^8 + 4*a^4*b*c^7 + 6*a^5*b*c^6 \\
& - 2*a^6*b*c^5 - 48*a^2*b^2*c^8 + 48*a^2*b^3*c^7 - 8*a^2*b^4*c^6 - 4*a^2*b^ \\
& 6*c^4 + 4*a^3*b^2*c^7 - 4*a^3*b^3*c^6 + 4*a^3*b^5*c^4 + 10*a^4*b^2*c^6 - 8* \\
& a^4*b^3*c^5 - a^4*b^4*c^4 - a^5*b^2*c^5 + a^5*b^3*c^4)) / a^8 + (((((2048*(26 \\
& *a^9*b^7 - 12*a^8*b^8 - 18*a^10*b^6 + 6*a^11*b^5 - 2*a^12*b^4 + 48*a^10*c^6 \\
& + 176*a^11*c^5 + 176*a^12*c^4 + 16*a^13*c^3 - 32*a^14*c^2 + 20*a^8*b^7*c + \\
& 74*a^9*b^6*c - 144*a^10*b*c^5 - 192*a^10*b^5*c - 352*a^11*b*c^4 + 122*a^11 \\
& *b^4*c - 144*a^12*b*c^3 - 40*a^12*b^3*c + 64*a^13*b*c^2 + 16*a^13*b^2*c + 8 \\
& *a^8*b^4*c^4 - 20*a^8*b^5*c^3 + 4*a^8*b^6*c^2 - 44*a^9*b^2*c^5 + 116*a^9*b^ \\
& 3*c^4 + 10*a^9*b^4*c^3 - 182*a^9*b^5*c^2 - 148*a^10*b^2*c^4 + 496*a^10*b^3* \\
& c^3 - 50*a^10*b^4*c^2 - 260*a^11*b^2*c^3 + 388*a^11*b^3*c^2 - 204*a^12*b^2* \\
& c^2)) / a^8 - (2048*tan(x/2) * (- (b^10 - 8*a^4*c^6 - 8*a^5*c^5 - b^7 * (- (4*a*c - \\
& b^2)^3)^{1/2} - b^8*c^2 + 10*a*b^6*c^3 - 33*a^2*b^4*c^4 + 52*a^2*b^6*c^2 + \\
& 38*a^3*b^2*c^5 - 96*a^3*b^4*c^3 + 66*a^4*b^2*c^4 + b^5*c^2 * (- (4*a*c - b^2) \\
& ^3)^{1/2} - 12*a*b^8*c - 4*a*b^3*c^3 * (- (4*a*c - b^2)^3)^{1/2} + 3*a^2*b*c^4 \\
& * (- (4*a*c - b^2)^3)^{1/2} + 4*a^3*b*c^3 * (- (4*a*c - b^2)^3)^{1/2} - 10*a^2*b \\
& ^3*c^2 * (- (4*a*c - b^2)^3)^{1/2} + 6*a*b^5*c * (- (4*a*c - b^2)^3)^{1/2}) / (2*(a \\
& ^8*b^4 - a^6*b^6 + 16*a^8*c^4 + 32*a^9*c^3 + 16*a^10*c^2 + 10*a^7*b^4*c - 8 \\
& *a^9*b^2*c + a^6*b^4*c^2 - 8*a^7*b^2*c^3 - 32*a^8*b^2*c^2))^{1/2} * (32*a^16 \\
& *c + 8*a^10*b^7 - 24*a^11*b^6 + 32*a^12*b^5 - 32*a^13*b^4 + 24*a^14*b^3 - 8 \\
& *a^15*b^2 + 96*a^12*c^5 + 64*a^13*c^4 - 128*a^14*c^3 - 64*a^15*c^2 - 8*a^10 \\
& *b^6*c - 56*a^11*b^5*c - 32*a^12*b*c^4 + 184*a^12*b^4*c + 352*a^13*b*c^3 - \\
& 200*a^13*b^3*c + 288*a^14*b*c^2 + 144*a^14*b^2*c + 8*a^10*b^4*c^3 - 8*a^10* \\
& b^5*c^2 - 56*a^11*b^2*c^4 + 40*a^11*b^3*c^3 + 96*a^11*b^4*c^2 - 272*a^12*b^ \\
& 2*c^3 + 8*a^12*b^3*c^2 - 320*a^13*b^2*c^2 - 96*a^15*b*c)) / a^8 * (- (b^10 - 8*
\end{aligned}$$





$$\begin{aligned}
& - b^2)^3)^{(1/2)} - 10*a^2*b^3*c^2*(-(4*a*c - b^2)^3)^{(1/2)} + 6*a*b^5*c*(-(4 \\
& *a*c - b^2)^3)^{(1/2)))/(2*(a^8*b^4 - a^6*b^6 + 16*a^8*c^4 + 32*a^9*c^3 + 16* \\
& a^10*c^2 + 10*a^7*b^4*c - 8*a^9*b^2*c + a^6*b^4*c^2 - 8*a^7*b^2*c^3 - 32*a^ \\
& 8*b^2*c^2)))^{(1/2)} - (2048*\tan(x/2)*(4*a*b^12 + 20*b^12*c - 4*b^13 - 4*a^2* \\
& b^11 + 4*a^3*b^10 - a^4*b^9 + a^5*b^8 + 12*a^4*c^9 - 44*a^5*c^8 + 2*a^6*c^7 \\
& + 38*a^7*c^6 - 18*a^8*c^5 + 2*a^9*c^4 + 4*b^8*c^5 - 20*b^9*c^4 + 40*b^10*c \\
& ^3 - 40*b^11*c^2 - 24*a*b^6*c^6 + 136*a*b^7*c^5 - 300*a*b^8*c^4 + 320*a*b^9 \\
& *c^3 - 160*a*b^10*c^2 - 20*a^2*b^10*c + 20*a^3*b^9*c - 92*a^4*b*c^8 - 31*a^ \\
& 4*b^8*c + 168*a^5*b*c^7 + 4*a^5*b^7*c + 2*a^6*b*c^6 - 8*a^6*b^6*c - 84*a^7* \\
& b*c^5 + 26*a^8*b*c^4 + 44*a^2*b^4*c^7 - 300*a^2*b^5*c^6 + 764*a^2*b^6*c^5 - \\
& 900*a^2*b^7*c^4 + 460*a^2*b^8*c^3 - 44*a^2*b^9*c^2 - 32*a^3*b^2*c^8 + 272* \\
& a^3*b^3*c^7 - 840*a^3*b^4*c^6 + 1156*a^3*b^5*c^5 - 660*a^3*b^6*c^4 + 72*a^3 \\
& *b^7*c^3 + 8*a^3*b^8*c^2 + 384*a^4*b^2*c^7 - 704*a^4*b^3*c^6 + 541*a^4*b^4* \\
& c^5 - 149*a^4*b^5*c^4 + 34*a^4*b^6*c^3 + 6*a^4*b^7*c^2 - 204*a^5*b^2*c^6 + \\
& 96*a^5*b^3*c^5 + 41*a^5*b^4*c^4 - 132*a^5*b^5*c^3 + 82*a^5*b^6*c^2 - 90*a^6 \\
& *b^2*c^5 + 174*a^6*b^3*c^4 - 104*a^6*b^4*c^3 + 8*a^6*b^5*c^2 + 82*a^7*b^2*c \\
& ^4 - 40*a^7*b^3*c^3 + 20*a^7*b^4*c^2 - 16*a^8*b^2*c^3 + 24*a*b^11*c))/a^8)* \\
& (-b^10 - 8*a^4*c^6 - 8*a^5*c^5 - b^7*(-(4*a*c - b^2)^3)^{(1/2)} - b^8*c^2 + \\
& 10*a*b^6*c^3 - 33*a^2*b^4*c^4 + 52*a^2*b^6*c^2 + 38*a^3*b^2*c^5 - 96*a^3*b^ \\
& 4*c^3 + 66*a^4*b^2*c^4 + b^5*c^2*(-(4*a*c - b^2)^3)^{(1/2)} - 12*a*b^8*c - 4* \\
& a*b^3*c^3*(-(4*a*c - b^2)^3)^{(1/2)} + 3*a^2*b*c^4*(-(4*a*c - b^2)^3)^{(1/2)} + \\
& 4*a^3*b*c^3*(-(4*a*c - b^2)^3)^{(1/2)} - 10*a^2*b^3*c^2*(-(4*a*c - b^2)^3)^{( \\
& 1/2)} + 6*a*b^5*c*(-(4*a*c - b^2)^3)^{(1/2)))/(2*(a^8*b^4 - a^6*b^6 + 16*a^8*c \\
& ^4 + 32*a^9*c^3 + 16*a^10*c^2 + 10*a^7*b^4*c - 8*a^9*b^2*c + a^6*b^4*c^2 - \\
& 8*a^7*b^2*c^3 - 32*a^8*b^2*c^2)))^{(1/2)} + ((((((2048*(26*a^9*b^7 - 12*a^8*b^ \\
& 8 - 18*a^10*b^6 + 6*a^11*b^5 - 2*a^12*b^4 + 48*a^10*c^6 + 176*a^11*c^5 + 17 \\
& 6*a^12*c^4 + 16*a^13*c^3 - 32*a^14*c^2 + 20*a^8*b^7*c + 74*a^9*b^6*c - 144* \\
& a^10*b*c^5 - 192*a^10*b^5*c - 352*a^11*b*c^4 + 122*a^11*b^4*c - 144*a^12*b* \\
& c^3 - 40*a^12*b^3*c + 64*a^13*b*c^2 + 16*a^13*b^2*c + 8*a^8*b^4*c^4 - 20*a^ \\
& 8*b^5*c^3 + 4*a^8*b^6*c^2 - 44*a^9*b^2*c^5 + 116*a^9*b^3*c^4 + 10*a^9*b^4*c \\
& ^3 - 182*a^9*b^5*c^2 - 148*a^10*b^2*c^4 + 496*a^10*b^3*c^3 - 50*a^10*b^4*c^ \\
& 2 - 260*a^11*b^2*c^3 + 388*a^11*b^3*c^2 - 204*a^12*b^2*c^2)))/a^8 + (2048*ta \\
& n(x/2)*(-(b^10 - 8*a^4*c^6 - 8*a^5*c^5 - b^7*(-(4*a*c - b^2)^3)^{(1/2)} - b^8 \\
& *c^2 + 10*a*b^6*c^3 - 33*a^2*b^4*c^4 + 52*a^2*b^6*c^2 + 38*a^3*b^2*c^5 - 96 \\
& *a^3*b^4*c^3 + 66*a^4*b^2*c^4 + b^5*c^2*(-(4*a*c - b^2)^3)^{(1/2)} - 12*a*b^8 \\
& *c - 4*a*b^3*c^3*(-(4*a*c - b^2)^3)^{(1/2)} + 3*a^2*b*c^4*(-(4*a*c - b^2)^3)^{ \\
& (1/2)} + 4*a^3*b*c^3*(-(4*a*c - b^2)^3)^{(1/2)} - 10*a^2*b^3*c^2*(-(4*a*c - b^ \\
& 2)^3)^{(1/2)} + 6*a*b^5*c*(-(4*a*c - b^2)^3)^{(1/2)))/(2*(a^8*b^4 - a^6*b^6 + 1 \\
& 6*a^8*c^4 + 32*a^9*c^3 + 16*a^10*c^2 + 10*a^7*b^4*c - 8*a^9*b^2*c + a^6*b^4 \\
& *c^2 - 8*a^7*b^2*c^3 - 32*a^8*b^2*c^2)))^{(1/2)}*(32*a^16*c + 8*a^10*b^7 - 24 \\
& *a^11*b^6 + 32*a^12*b^5 - 32*a^13*b^4 + 24*a^14*b^3 - 8*a^15*b^2 + 96*a^12* \\
& c^5 + 64*a^13*c^4 - 128*a^14*c^3 - 64*a^15*c^2 - 8*a^10*b^6*c - 56*a^11*b^5 \\
& *c - 32*a^12*b*c^4 + 184*a^12*b^4*c + 352*a^13*b*c^3 - 200*a^13*b^3*c + 288 \\
& *a^14*b*c^2 + 144*a^14*b^2*c + 8*a^10*b^4*c^3 - 8*a^10*b^5*c^2 - 56*a^11*b^ \\
& 2*c^4 + 40*a^11*b^3*c^3 + 96*a^11*b^4*c^2 - 272*a^12*b^2*c^3 + 8*a^12*b^3*c
\end{aligned}$$

$$\begin{aligned}
&^2 - 320*a^{13}*b^2*c^2 - 96*a^{15}*b*c)/a^8)*(-(b^{10} - 8*a^4*c^6 - 8*a^5*c^5 \\
&- b^7*(-(4*a*c - b^2)^3)^{(1/2)} - b^8*c^2 + 10*a*b^6*c^3 - 33*a^2*b^4*c^4 + \\
&52*a^2*b^6*c^2 + 38*a^3*b^2*c^5 - 96*a^3*b^4*c^3 + 66*a^4*b^2*c^4 + b^5*c^2 \\
&*(-(4*a*c - b^2)^3)^{(1/2)} - 12*a*b^8*c - 4*a*b^3*c^3*(-(4*a*c - b^2)^3)^{(1/2)} \\
&+ 3*a^2*b*c^4*(-(4*a*c - b^2)^3)^{(1/2)} + 4*a^3*b*c^3*(-(4*a*c - b^2)^3)^{(1/2)} \\
&- 10*a^2*b^3*c^2*(-(4*a*c - b^2)^3)^{(1/2)} + 6*a*b^5*c*(-(4*a*c - b^2)^3)^{(1/2)}) \\
&/ (2*(a^8*b^4 - a^6*b^6 + 16*a^8*c^4 + 32*a^9*c^3 + 16*a^10*c^2 + 10*a^7*b^4*c \\
&- 8*a^9*b^2*c + a^6*b^4*c^2 - 8*a^7*b^2*c^3 - 32*a^8*b^2*c^2)) \\
&)^{(1/2)} - (2048*\tan(x/2)*(8*a^{14}*c + 8*a^4*b^{11} - 24*a^5*b^{10} + 36*a^6*b^9 \\
&- 52*a^7*b^8 + 61*a^8*b^7 - 49*a^9*b^6 + 33*a^{10}*b^5 - 17*a^{11}*b^4 + 6*a^{12} \\
&*b^3 - 2*a^{13}*b^2 + 72*a^8*c^7 - 136*a^9*c^6 - 192*a^{10}*c^5 + 168*a^{11}*c^4 \\
&+ 80*a^{12}*c^3 - 64*a^{13}*c^2 - 8*a^4*b^{10}*c - 72*a^5*b^9*c + 244*a^6*b^8*c - \\
&308*a^7*b^7*c - 88*a^8*b*c^6 + 375*a^8*b^6*c + 496*a^9*b*c^5 - 416*a^9*b^5 \\
&*c - 16*a^{10}*b*c^4 + 295*a^{10}*b^4*c - 328*a^{11}*b*c^3 - 178*a^{11}*b^3*c + 184 \\
&*a^{12}*b*c^2 + 84*a^{12}*b^2*c + 8*a^4*b^8*c^3 - 8*a^4*b^9*c^2 - 72*a^5*b^6*c^4 \\
&+ 56*a^5*b^7*c^3 + 112*a^5*b^8*c^2 + 220*a^6*b^4*c^5 - 140*a^6*b^5*c^4 - \\
&424*a^6*b^6*c^3 + 80*a^6*b^7*c^2 - 256*a^7*b^2*c^6 + 192*a^7*b^3*c^5 + 416*a^7 \\
&*b^4*c^4 + 572*a^7*b^5*c^3 - 732*a^7*b^6*c^2 + 64*a^8*b^2*c^5 - 1152*a^8 \\
&*b^3*c^4 + 521*a^8*b^4*c^3 + 779*a^8*b^5*c^2 + 234*a^9*b^2*c^4 - 494*a^9*b^3 \\
&*c^3 - 723*a^9*b^4*c^2 + 180*a^{10}*b^2*c^3 + 770*a^{10}*b^3*c^2 - 416*a^{11}*b^2 \\
&*c^2 - 24*a^{13}*b*c)/a^8)*(-(b^{10} - 8*a^4*c^6 - 8*a^5*c^5 - b^7*(-(4*a*c - \\
&b^2)^3)^{(1/2)} - b^8*c^2 + 10*a*b^6*c^3 - 33*a^2*b^4*c^4 + 52*a^2*b^6*c^2 + \\
&38*a^3*b^2*c^5 - 96*a^3*b^4*c^3 + 66*a^4*b^2*c^4 + b^5*c^2*(-(4*a*c - b^2)^3)^{(1/2)} \\
&- 12*a*b^8*c - 4*a*b^3*c^3*(-(4*a*c - b^2)^3)^{(1/2)} + 3*a^2*b*c^4 \\
&*(-(4*a*c - b^2)^3)^{(1/2)} + 4*a^3*b*c^3*(-(4*a*c - b^2)^3)^{(1/2)} - 10*a^2*b^3 \\
&*c^2*(-(4*a*c - b^2)^3)^{(1/2)} + 6*a*b^5*c*(-(4*a*c - b^2)^3)^{(1/2)}) \\
&/ (2*(a^8*b^4 - a^6*b^6 + 16*a^8*c^4 + 32*a^9*c^3 + 16*a^10*c^2 + 10*a^7*b^4*c - 8 \\
&*a^9*b^2*c + a^6*b^4*c^2 - 8*a^7*b^2*c^3 - 32*a^8*b^2*c^2)) \\
&)^{(1/2)} - (2048*(26*a^3*b^{11} - 12*a^2*b^{12} - 30*a^4*b^{10} + 29*a^5*b^9 - 20*a^6*b^8 + 10*a^7 \\
&*b^7 - 4*a^8*b^6 + a^9*b^5 + 12*a^6*c^8 + 88*a^7*c^7 + 72*a^8*c^6 - 44*a^9*c^5 \\
&- 28*a^{10}*c^4 + 12*a^{11}*c^3 + 20*a^2*b^{11}*c + 98*a^3*b^{10}*c - 228*a^4*b^9*c \\
&+ 251*a^5*b^8*c - 96*a^6*b*c^7 - 238*a^6*b^7*c - 200*a^7*b*c^6 + 154*a^7 \\
&*b^6*c + 100*a^8*b*c^5 - 72*a^8*b^5*c + 112*a^9*b*c^4 + 27*a^9*b^4*c - 68 \\
&*a^{10}*b*c^3 - 6*a^{10}*b^3*c + 8*a^{11}*b*c^2 + 8*a^2*b^8*c^4 - 20*a^2*b^9*c^3 \\
&+ 4*a^2*b^{10}*c^2 - 60*a^3*b^6*c^5 + 156*a^3*b^7*c^4 + 2*a^3*b^8*c^3 - 222*a^3 \\
&*b^9*c^2 + 136*a^4*b^4*c^6 - 388*a^4*b^5*c^5 - 152*a^4*b^6*c^4 + 856*a^4*b^7 \\
&*c^3 - 202*a^4*b^8*c^2 - 100*a^5*b^2*c^7 + 364*a^5*b^3*c^6 + 394*a^5*b^4 \\
&*c^5 - 1362*a^5*b^5*c^4 - 115*a^5*b^6*c^3 + 635*a^5*b^7*c^2 - 340*a^6*b^2*c^6 \\
&+ 904*a^6*b^3*c^5 + 583*a^6*b^4*c^4 - 564*a^6*b^5*c^3 - 655*a^6*b^6*c^2 \\
&- 399*a^7*b^2*c^5 + 9*a^7*b^3*c^4 + 536*a^7*b^4*c^3 + 612*a^7*b^5*c^2 - 37*a^8 \\
&*b^2*c^4 - 524*a^8*b^3*c^3 - 354*a^8*b^4*c^2 + 239*a^9*b^2*c^3 + 145*a^9 \\
&*b^3*c^2 - 47*a^{10}*b^2*c^2))/a^8)*(-(b^{10} - 8*a^4*c^6 - 8*a^5*c^5 - b^7*(-(4*a*c - \\
&b^2)^3)^{(1/2)} - b^8*c^2 + 10*a*b^6*c^3 - 33*a^2*b^4*c^4 + 52*a^2*b^6 \\
&*c^2 + 38*a^3*b^2*c^5 - 96*a^3*b^4*c^3 + 66*a^4*b^2*c^4 + b^5*c^2*(-(4*a*c \\
&- b^2)^3)^{(1/2)} - 12*a*b^8*c - 4*a*b^3*c^3*(-(4*a*c - b^2)^3)^{(1/2)} + 3*a^
\end{aligned}$$

$$\begin{aligned}
& 2*b*c^4*(-(4*a*c - b^2)^3)^{(1/2)} + 4*a^3*b*c^3*(-(4*a*c - b^2)^3)^{(1/2)} - 1 \\
& 0*a^2*b^3*c^2*(-(4*a*c - b^2)^3)^{(1/2)} + 6*a*b^5*c*(-(4*a*c - b^2)^3)^{(1/2)} \\
& )/(2*(a^8*b^4 - a^6*b^6 + 16*a^8*c^4 + 32*a^9*c^3 + 16*a^10*c^2 + 10*a^7*b^4*c - 8*a^9*b^2*c + a^6*b^4*c^2 - 8*a^7*b^2*c^3 - 32*a^8*b^2*c^2))^{(1/2)} + \\
& (2048*\tan(x/2)*(4*a*b^{12} + 20*b^{12}*c - 4*b^{13} - 4*a^2*b^{11} + 4*a^3*b^{10} - \\
& a^4*b^9 + a^5*b^8 + 12*a^4*c^9 - 44*a^5*c^8 + 2*a^6*c^7 + 38*a^7*c^6 - 18*a^8*c^5 + 2*a^9*c^4 + 4*b^8*c^5 - 20*b^9*c^4 + 40*b^{10}*c^3 - 40*b^{11}*c^2 - 2 \\
& 4*a*b^6*c^6 + 136*a*b^7*c^5 - 300*a*b^8*c^4 + 320*a*b^9*c^3 - 160*a*b^{10}*c^2 - 20*a^2*b^{10}*c + 20*a^3*b^9*c - 92*a^4*b^8*c - 31*a^4*b^8*c + 168*a^5*b^7*c^2 + 4*a^5*b^7*c + 2*a^6*b^6*c - 8*a^6*b^6*c - 84*a^7*b^5*c^2 + 26*a^8*b^5*c^2 \\
& + 44*a^2*b^4*c^7 - 300*a^2*b^5*c^6 + 764*a^2*b^6*c^5 - 900*a^2*b^7*c^4 + 460*a^2*b^8*c^3 - 44*a^2*b^9*c^2 - 32*a^3*b^2*c^8 + 272*a^3*b^3*c^7 - 840*a^3*b^4*c^6 + 1156*a^3*b^5*c^5 - 660*a^3*b^6*c^4 + 72*a^3*b^7*c^3 + 8*a^3*b^8*c^2 + 384*a^4*b^2*c^7 - 704*a^4*b^3*c^6 + 541*a^4*b^4*c^5 - 149*a^4*b^5*c^4 + 34*a^4*b^6*c^3 + 6*a^4*b^7*c^2 - 204*a^5*b^2*c^6 + 96*a^5*b^3*c^5 + 41*a^5*b^4*c^4 - 132*a^5*b^5*c^3 + 82*a^5*b^6*c^2 - 90*a^6*b^2*c^5 + 174*a^6*b^3*c^4 - 104*a^6*b^4*c^3 + 8*a^6*b^5*c^2 + 82*a^7*b^2*c^4 - 40*a^7*b^3*c^3 + 20*a^7*b^4*c^2 - 16*a^8*b^2*c^3 + 24*a*b^{11}*c))/a^8)*(-(b^{10} - 8*a^4*c^6 - 8*a^5*c^5 - b^7*(-(4*a*c - b^2)^3)^{(1/2)} - b^8*c^2 + 10*a*b^6*c^3 - 33*a^2*b^4*c^4 + 52*a^2*b^6*c^2 + 38*a^3*b^2*c^5 - 96*a^3*b^4*c^3 + 66*a^4*b^2*c^4 + b^5*c^2*(-(4*a*c - b^2)^3)^{(1/2)} - 12*a*b^8*c - 4*a*b^3*c^3*(-(4*a*c - b^2)^3)^{(1/2)} + 3*a^2*b*c^4*(-(4*a*c - b^2)^3)^{(1/2)} + 4*a^3*b*c^3*(-(4*a*c - b^2)^3)^{(1/2)} - 10*a^2*b^3*c^2*(-(4*a*c - b^2)^3)^{(1/2)} + 6*a*b^5*c*(-(4*a*c - b^2)^3)^{(1/2)))/(2*(a^8*b^4 - a^6*b^6 + 16*a^8*c^4 + 32*a^9*c^3 + 16*a^10*c^2 + 10*a^7*b^4*c - 8*a^9*b^2*c + a^6*b^4*c^2 - 8*a^7*b^2*c^3 - 32*a^8*b^2*c^2))^{(1/2)))*(-(b^{10} - 8*a^4*c^6 - 8*a^5*c^5 - b^7*(-(4*a*c - b^2)^3)^{(1/2)} - b^8*c^2 + 10*a*b^6*c^3 - 33*a^2*b^4*c^4 + 52*a^2*b^6*c^2 + 38*a^3*b^2*c^5 - 96*a^3*b^4*c^3 + 66*a^4*b^2*c^4 + b^5*c^2*(-(4*a*c - b^2)^3)^{(1/2)} - 12*a*b^8*c - 4*a*b^3*c^3*(-(4*a*c - b^2)^3)^{(1/2)} + 3*a^2*b*c^4*(-(4*a*c - b^2)^3)^{(1/2)} + 4*a^3*b*c^3*(-(4*a*c - b^2)^3)^{(1/2)} - 10*a^2*b^3*c^2*(-(4*a*c - b^2)^3)^{(1/2)} + 6*a*b^5*c*(-(4*a*c - b^2)^3)^{(1/2)))/(2*(a^8*b^4 - a^6*b^6 + 16*a^8*c^4 + 32*a^9*c^3 + 16*a^10*c^2 + 10*a^7*b^4*c - 8*a^9*b^2*c + a^6*b^4*c^2 - 8*a^7*b^2*c^3 - 32*a^8*b^2*c^2))^{(1/2)}*2i + (\operatorname{atan}(((2048*\tan(x/2)*(4*a*b^{12} + 20*b^{12}*c - 4*b^{13} - 4*a^2*b^{11} + 4*a^3*b^{10} - a^4*b^9 + a^5*b^8 + 12*a^4*c^9 - 44*a^5*c^8 + 2*a^6*c^7 + 38*a^7*c^6 - 18*a^8*c^5 + 2*a^9*c^4 + 4*b^8*c^5 - 20*b^9*c^4 + 40*b^{10}*c^3 - 40*b^{11}*c^2 - 24*a*b^6*c^6 + 136*a*b^7*c^5 - 300*a*b^8*c^4 + 320*a*b^9*c^3 - 160*a*b^{10}*c^2 - 20*a^2*b^{10}*c + 20*a^3*b^9*c - 92*a^4*b^8*c - 31*a^4*b^8*c + 168*a^5*b^7*c^2 + 4*a^5*b^7*c + 2*a^6*b^6*c - 8*a^6*b^6*c - 84*a^7*b^5*c^2 + 26*a^8*b^5*c^2 + 44*a^2*b^4*c^7 - 300*a^2*b^5*c^6 + 764*a^2*b^6*c^5 - 900*a^2*b^7*c^4 + 460*a^2*b^8*c^3 - 44*a^2*b^9*c^2 - 32*a^3*b^2*c^8 + 272*a^3*b^3*c^7 - 840*a^3*b^4*c^6 + 1156*a^3*b^5*c^5 - 660*a^3*b^6*c^4 + 72*a^3*b^7*c^3 + 8*a^3*b^8*c^2 + 384*a^4*b^2*c^7 - 704*a^4*b^3*c^6 + 541*a^4*b^4*c^5 - 149*a^4*b^5*c^4 + 34*a^4*b^6*c^3 + 6*a^4*b^7*c^2 - 204*a^5*b^2*c^6 + 96*a^5*b^3*c^5 + 41*a^5*b^4*c^4 - 132*a^5*b^5*c^3 + 82*a^5*b^6*c^2 - 90*a^6*b^2*c^5 + 174*a^6*b^3*c^4 - 104*a^6*b^4*c^3 + 8*a^6*b^5*c^2 + 82*a^7*b^2*c^4 - 40*a^7*b^3*c^3 + 20*a^7*b^4*c^2 - 16*a^8*b^2*c^3 + 24*a*b^{11}*c))/a^8)
\end{aligned}$$

$$\begin{aligned}
& ^3c^4 - 104a^6b^4c^3 + 8a^6b^5c^2 + 82a^7b^2c^4 - 40a^7b^3c^3 \\
& + 20a^7b^4c^2 - 16a^8b^2c^3 + 24a^8b^3c^2 - 12a^8b^4c^1 + 24a^8b^5c^0)/a^8 + (((2048*(26a^3b^11 \\
& 1 - 12a^2b^12 - 30a^4b^10 + 29a^5b^9 - 20a^6b^8 + 10a^7b^7 - 4a^8 \\
& 8b^6 + a^9b^5 + 12a^6c^8 + 88a^7c^7 + 72a^8c^6 - 44a^9c^5 - 28a^ \\
& 10c^4 + 12a^11c^3 + 20a^2b^11c + 98a^3b^10c - 228a^4b^9c + 251* \\
& a^5b^8c - 96a^6b^7c - 238a^6b^7c - 200a^7b^6c + 154a^7b^6c + \\
& 100a^8b^5c - 72a^8b^5c + 112a^9b^4c + 27a^9b^4c - 68a^10b^3c^3 \\
& - 6a^10b^3c + 8a^11b^2c^2 + 8a^2b^8c^4 - 20a^2b^9c^3 + 4a^2b^1 \\
& 0c^2 - 60a^3b^6c^5 + 156a^3b^7c^4 + 2a^3b^8c^3 - 222a^3b^9c^2 \\
& + 136a^4b^4c^6 - 388a^4b^5c^5 - 152a^4b^6c^4 + 856a^4b^7c^3 - 2 \\
& 02a^4b^8c^2 - 100a^5b^2c^7 + 364a^5b^3c^6 + 394a^5b^4c^5 - 1362 \\
& *a^5b^5c^4 - 115a^5b^6c^3 + 635a^5b^7c^2 - 340a^6b^2c^6 + 904a^ \\
& 6b^3c^5 + 583a^6b^4c^4 - 564a^6b^5c^3 - 655a^6b^6c^2 - 399a^7b \\
& ^2c^5 + 9a^7b^3c^4 + 536a^7b^4c^3 + 612a^7b^5c^2 - 37a^8b^2c^4 \\
& - 524a^8b^3c^3 - 354a^8b^4c^2 + 239a^9b^2c^3 + 145a^9b^3c^2 - \\
& 47a^10b^2c^2)/a^8 - (((2048*tan(x/2)*(8a^14c + 8a^4b^11 - 24a^5b^ \\
& 10 + 36a^6b^9 - 52a^7b^8 + 61a^8b^7 - 49a^9b^6 + 33a^10b^5 - 17a^ \\
& ^11b^4 + 6a^12b^3 - 2a^13b^2 + 72a^8c^7 - 136a^9c^6 - 192a^10c^5 \\
& + 168a^11c^4 + 80a^12c^3 - 64a^13c^2 - 8a^4b^10c - 72a^5b^9c + \\
& 244a^6b^8c - 308a^7b^7c - 88a^8b^6c + 375a^8b^6c + 496a^9b^5c \\
& ^5 - 416a^9b^5c - 16a^10b^4c + 295a^10b^4c - 328a^11b^3c^3 - 178* \\
& a^11b^3c + 184a^12b^2c^2 + 84a^12b^2c + 8a^4b^8c^3 - 8a^4b^9c^2 \\
& - 72a^5b^6c^4 + 56a^5b^7c^3 + 112a^5b^8c^2 + 220a^6b^4c^5 - 14 \\
& 0a^6b^5c^4 - 424a^6b^6c^3 + 80a^6b^7c^2 - 256a^7b^2c^6 + 192a^ \\
& 7b^3c^5 + 416a^7b^4c^4 + 572a^7b^5c^3 - 732a^7b^6c^2 + 64a^8b^ \\
& 2c^5 - 1152a^8b^3c^4 + 521a^8b^4c^3 + 779a^8b^5c^2 + 234a^9b^2* \\
& c^4 - 494a^9b^3c^3 - 723a^9b^4c^2 + 180a^10b^2c^3 + 770a^10b^3c \\
& ^2 - 416a^11b^2c^2 - 24a^13b^2c)/a^8 + (((2048*(26a^9b^7 - 12a^8b^ \\
& 8 - 18a^10b^6 + 6a^11b^5 - 2a^12b^4 + 48a^10c^6 + 176a^11c^5 + 17 \\
& 6a^12c^4 + 16a^13c^3 - 32a^14c^2 + 20a^8b^7c + 74a^9b^6c - 144* \\
& a^10b^5c - 192a^10b^5c - 352a^11b^4c + 122a^11b^4c - 144a^12b* \\
& c^3 - 40a^12b^3c + 64a^13b^2c + 16a^13b^2c + 8a^8b^4c^4 - 20a^ \\
& 8b^5c^3 + 4a^8b^6c^2 - 44a^9b^2c^5 + 116a^9b^3c^4 + 10a^9b^4c \\
& ^3 - 182a^9b^5c^2 - 148a^10b^2c^4 + 496a^10b^3c^3 - 50a^10b^4c^ \\
& 2 - 260a^11b^2c^3 + 388a^11b^3c^2 - 204a^12b^2c^2)/a^8 - (1024*ta \\
& n(x/2)*(a^2 - 2a*c + 2b^2)*(32a^16c + 8a^10b^7 - 24a^11b^6 + 32a^1 \\
& 2b^5 - 32a^13b^4 + 24a^14b^3 - 8a^15b^2 + 96a^12c^5 + 64a^13c^4 \\
& - 128a^14c^3 - 64a^15c^2 - 8a^10b^6c - 56a^11b^5c - 32a^12b^4c^4 \\
& + 184a^12b^4c + 352a^13b^3c^3 - 200a^13b^3c + 288a^14b^2c^2 + 144* \\
& a^14b^2c + 8a^10b^4c^3 - 8a^10b^5c^2 - 56a^11b^2c^4 + 40a^11b^ \\
& 3c^3 + 96a^11b^4c^2 - 272a^12b^2c^3 + 8a^12b^3c^2 - 320a^13b^2* \\
& c^2 - 96a^15b^2c)/a^11)*(a^2 - 2a*c + 2b^2)/(2a^3))*(a^2 - 2a*c + 2 \\
& b^2)/(2a^3))*(a^2 - 2a*c + 2b^2)/(2a^3))*(a^2 - 2a*c + 2b^2)*i)/(2 \\
& *a^3) + (((2048*tan(x/2)*(4a*b^12 + 20b^12c - 4b^13 - 4a^2b^11 + 4a^ \\
& 3b^10 - a^4b^9 + a^5b^8 + 12a^4c^9 - 44a^5c^8 + 2a^6c^7 + 38a^7c
\end{aligned}$$

$$\begin{aligned}
& ^6 - 18a^8c^5 + 2a^9c^4 + 4b^8c^5 - 20b^9c^4 + 40b^{10}c^3 - 40b^{11}c^2 - 24a^*b^6c^6 + 136a^*b^7c^5 - 300a^*b^8c^4 + 320a^*b^9c^3 - 160a^*b^{10}c^2 - 20a^2b^{10}c + 20a^3b^9c - 92a^4b^8c - 31a^4b^8c + 168a^5b^7c + 4a^5b^7c + 2a^6b^6c - 8a^6b^6c - 84a^7b^5c + 26a^8b^4c + 44a^2b^4c^7 - 300a^2b^5c^6 + 764a^2b^6c^5 - 900a^2b^7c^4 + 460a^2b^8c^3 - 44a^2b^9c^2 - 32a^3b^2c^8 + 272a^3b^3c^7 - 840a^3b^4c^6 + 1156a^3b^5c^5 - 660a^3b^6c^4 + 72a^3b^7c^3 + 8a^3b^8c^2 + 384a^4b^2c^7 - 704a^4b^3c^6 + 541a^4b^4c^5 - 149a^4b^5c^4 + 34a^4b^6c^3 + 6a^4b^7c^2 - 204a^5b^2c^6 + 96a^5b^3c^5 + 41a^5b^4c^4 - 132a^5b^5c^3 + 82a^5b^6c^2 - 90a^6b^2c^5 + 174a^6b^3c^4 - 104a^6b^4c^3 + 8a^6b^5c^2 + 82a^7b^2c^4 - 40a^7b^3c^3 + 20a^7b^4c^2 - 16a^8b^2c^3 + 24a^*b^{11}c)) / a^8 - (((2048*(26a^3b^{11} - 12a^2b^{12} - 30a^4b^{10} + 29a^5b^9 - 20a^6b^8 + 10a^7b^7 - 4a^8b^6 + a^9b^5 + 12a^6c^8 + 88a^7c^7 + 72a^8c^6 - 44a^9c^5 - 28a^{10}c^4 + 12a^{11}c^3 + 20a^2b^{11}c + 98a^3b^{10}c - 228a^4b^9c + 251a^5b^8c - 96a^6b^7c - 238a^6b^7c - 200a^7b^6c + 154a^7b^6c + 100a^8b^5c - 72a^8b^5c + 112a^9b^4c + 27a^9b^4c - 68a^{10}b^3c - 6a^{10}b^3c + 8a^{11}b^2c + 8a^2b^8c^4 - 20a^2b^9c^3 + 4a^2b^{10}c^2 - 60a^3b^6c^5 + 156a^3b^7c^4 + 2a^3b^8c^3 - 222a^3b^9c^2 + 136a^4b^4c^6 - 388a^4b^5c^5 - 152a^4b^6c^4 + 856a^4b^7c^3 - 202a^4b^8c^2 - 100a^5b^2c^7 + 364a^5b^3c^6 + 394a^5b^4c^5 - 1362a^5b^5c^4 - 115a^5b^6c^3 + 635a^5b^7c^2 - 340a^6b^2c^6 + 904a^6b^3c^5 + 583a^6b^4c^4 - 564a^6b^5c^3 - 655a^6b^6c^2 - 399a^7b^2c^5 + 9a^7b^3c^4 + 536a^7b^4c^3 + 612a^7b^5c^2 - 37a^8b^2c^4 - 524a^8b^3c^3 - 354a^8b^4c^2 + 239a^9b^2c^3 + 145a^9b^3c^2 - 47a^{10}b^2c^2)) / a^8 + (((2048*\tan(x/2)*(8a^{14}c + 8a^4b^{11} - 24a^5b^{10} + 36a^6b^9 - 52a^7b^8 + 61a^8b^7 - 49a^9b^6 + 33a^{10}b^5 - 17a^{11}b^4 + 6a^{12}b^3 - 2a^{13}b^2 + 72a^8c^7 - 136a^9c^6 - 192a^{10}c^5 + 168a^{11}c^4 + 80a^{12}c^3 - 64a^{13}c^2 - 8a^4b^{10}c - 72a^5b^9c + 244a^6b^8c - 308a^7b^7c - 88a^8b^6c + 375a^8b^6c + 496a^9b^5c - 416a^9b^5c - 16a^{10}b^4c + 295a^{10}b^4c - 328a^{11}b^3c^3 - 178a^{11}b^3c + 184a^{12}b^2c^2 + 84a^{12}b^2c + 8a^4b^8c^3 - 8a^4b^9c^2 - 72a^5b^6c^4 + 56a^5b^7c^3 + 112a^5b^8c^2 + 220a^6b^4c^5 - 140a^6b^5c^4 - 424a^6b^6c^3 + 80a^6b^7c^2 - 256a^7b^2c^6 + 192a^7b^3c^5 + 416a^7b^4c^4 + 572a^7b^5c^3 - 732a^7b^6c^2 + 64a^8b^2c^5 - 1152a^8b^3c^4 + 521a^8b^4c^3 + 779a^8b^5c^2 + 234a^9b^2c^4 - 494a^9b^3c^3 - 723a^9b^4c^2 + 180a^{10}b^2c^3 + 770a^{10}b^3c^2 - 416a^{11}b^2c^2 - 24a^{13}b^2c)) / a^8 - (((2048*(26a^9b^7 - 12a^8b^8 - 18a^{10}b^6 + 6a^{11}b^5 - 2a^{12}b^4 + 48a^{10}c^6 + 176a^{11}c^5 + 176a^{12}c^4 + 16a^{13}c^3 - 32a^{14}c^2 + 20a^8b^7c + 74a^9b^6c - 144a^{10}b^5c - 192a^{10}b^5c - 352a^{11}b^4c + 122a^{11}b^4c - 144a^{12}b^3c - 40a^{12}b^3c + 64a^{13}b^2c + 16a^{13}b^2c + 8a^8b^4c^4 - 20a^8b^5c^3 + 4a^8b^6c^2 - 44a^9b^2c^5 + 116a^9b^3c^4 + 10a^9b^4c^3 - 182a^9b^5c^2 - 148a^{10}b^2c^4 + 496a^{10}b^3c^3 - 50a^{10}b^4c^2 - 260a^{11}b^2c^3 + 388a^{11}b^3c^2 - 204a^{12}b^2c^2)) / a^8 +
\end{aligned}$$

$$\begin{aligned}
& (1024*\tan(x/2)*(a^2 - 2*a*c + 2*b^2)*(32*a^16*c + 8*a^10*b^7 - 24*a^11*b^6 \\
& + 32*a^12*b^5 - 32*a^13*b^4 + 24*a^14*b^3 - 8*a^15*b^2 + 96*a^12*c^5 + 64* \\
& a^13*c^4 - 128*a^14*c^3 - 64*a^15*c^2 - 8*a^10*b^6*c - 56*a^11*b^5*c - 32*a \\
& ^12*b*c^4 + 184*a^12*b^4*c + 352*a^13*b*c^3 - 200*a^13*b^3*c + 288*a^14*b*c \\
& ^2 + 144*a^14*b^2*c + 8*a^10*b^4*c^3 - 8*a^10*b^5*c^2 - 56*a^11*b^2*c^4 + 4 \\
& 0*a^11*b^3*c^3 + 96*a^11*b^4*c^2 - 272*a^12*b^2*c^3 + 8*a^12*b^3*c^2 - 320* \\
& a^13*b^2*c^2 - 96*a^15*b*c))/a^11*(a^2 - 2*a*c + 2*b^2))/(2*a^3))*(a^2 - 2 \\
& *a*c + 2*b^2))/(2*a^3))*(a^2 - 2*a*c + 2*b^2))/(2*a^3))*(a^2 - 2*a*c + 2*b^ \\
& 2)*1i)/(2*a^3))/((4096*(14*a^3*c^9 + a^4*c^8 - 10*a^5*c^7 + 3*a^6*c^6 - 4*b \\
& ^4*c^8 + 16*b^5*c^7 - 24*b^6*c^6 + 16*b^7*c^5 - 4*b^8*c^4 + 4*a*b^2*c^9 - 2 \\
& 8*a*b^3*c^8 + 56*a*b^4*c^7 - 40*a*b^5*c^6 + 4*a*b^6*c^5 + 4*a*b^7*c^4 + 12* \\
& a^2*b*c^9 - 22*a^3*b*c^8 + 4*a^4*b*c^7 + 6*a^5*b*c^6 - 2*a^6*b*c^5 - 48*a^2 \\
& *b^2*c^8 + 48*a^2*b^3*c^7 - 8*a^2*b^4*c^6 - 4*a^2*b^6*c^4 + 4*a^3*b^2*c^7 - \\
& 4*a^3*b^3*c^6 + 4*a^3*b^5*c^4 + 10*a^4*b^2*c^6 - 8*a^4*b^3*c^5 - a^4*b^4*c \\
& ^4 - a^5*b^2*c^5 + a^5*b^3*c^4))/a^8 - (((2048*\tan(x/2)*(4*a*b^12 + 20*b^12 \\
& *c - 4*b^13 - 4*a^2*b^11 + 4*a^3*b^10 - a^4*b^9 + a^5*b^8 + 12*a^4*c^9 - 44 \\
& *a^5*c^8 + 2*a^6*c^7 + 38*a^7*c^6 - 18*a^8*c^5 + 2*a^9*c^4 + 4*b^8*c^5 - 20 \\
& *b^9*c^4 + 40*b^10*c^3 - 40*b^11*c^2 - 24*a*b^6*c^6 + 136*a*b^7*c^5 - 300*a \\
& *b^8*c^4 + 320*a*b^9*c^3 - 160*a*b^10*c^2 - 20*a^2*b^10*c + 20*a^3*b^9*c - \\
& 92*a^4*b*c^8 - 31*a^4*b^8*c + 168*a^5*b*c^7 + 4*a^5*b^7*c + 2*a^6*b*c^6 - 8 \\
& *a^6*b^6*c - 84*a^7*b*c^5 + 26*a^8*b*c^4 + 44*a^2*b^4*c^7 - 300*a^2*b^5*c^6 \\
& + 764*a^2*b^6*c^5 - 900*a^2*b^7*c^4 + 460*a^2*b^8*c^3 - 44*a^2*b^9*c^2 - 3 \\
& 2*a^3*b^2*c^8 + 272*a^3*b^3*c^7 - 840*a^3*b^4*c^6 + 1156*a^3*b^5*c^5 - 660* \\
& a^3*b^6*c^4 + 72*a^3*b^7*c^3 + 8*a^3*b^8*c^2 + 384*a^4*b^2*c^7 - 704*a^4*b^ \\
& 3*c^6 + 541*a^4*b^4*c^5 - 149*a^4*b^5*c^4 + 34*a^4*b^6*c^3 + 6*a^4*b^7*c^2 \\
& - 204*a^5*b^2*c^6 + 96*a^5*b^3*c^5 + 41*a^5*b^4*c^4 - 132*a^5*b^5*c^3 + 82* \\
& a^5*b^6*c^2 - 90*a^6*b^2*c^5 + 174*a^6*b^3*c^4 - 104*a^6*b^4*c^3 + 8*a^6*b^ \\
& 5*c^2 + 82*a^7*b^2*c^4 - 40*a^7*b^3*c^3 + 20*a^7*b^4*c^2 - 16*a^8*b^2*c^3 + \\
& 24*a*b^11*c))/a^8 + (((2048*(26*a^3*b^11 - 12*a^2*b^12 - 30*a^4*b^10 + 29* \\
& a^5*b^9 - 20*a^6*b^8 + 10*a^7*b^7 - 4*a^8*b^6 + a^9*b^5 + 12*a^6*c^8 + 88*a \\
& ^7*c^7 + 72*a^8*c^6 - 44*a^9*c^5 - 28*a^10*c^4 + 12*a^11*c^3 + 20*a^2*b^11* \\
& c + 98*a^3*b^10*c - 228*a^4*b^9*c + 251*a^5*b^8*c - 96*a^6*b*c^7 - 238*a^6* \\
& b^7*c - 200*a^7*b*c^6 + 154*a^7*b^6*c + 100*a^8*b*c^5 - 72*a^8*b^5*c + 112* \\
& a^9*b*c^4 + 27*a^9*b^4*c - 68*a^10*b*c^3 - 6*a^10*b^3*c + 8*a^11*b*c^2 + 8* \\
& a^2*b^8*c^4 - 20*a^2*b^9*c^3 + 4*a^2*b^10*c^2 - 60*a^3*b^6*c^5 + 156*a^3*b^ \\
& 7*c^4 + 2*a^3*b^8*c^3 - 222*a^3*b^9*c^2 + 136*a^4*b^4*c^6 - 388*a^4*b^5*c^5 \\
& - 152*a^4*b^6*c^4 + 856*a^4*b^7*c^3 - 202*a^4*b^8*c^2 - 100*a^5*b^2*c^7 + \\
& 364*a^5*b^3*c^6 + 394*a^5*b^4*c^5 - 1362*a^5*b^5*c^4 - 115*a^5*b^6*c^3 + 63 \\
& 5*a^5*b^7*c^2 - 340*a^6*b^2*c^6 + 904*a^6*b^3*c^5 + 583*a^6*b^4*c^4 - 564*a \\
& ^6*b^5*c^3 - 655*a^6*b^6*c^2 - 399*a^7*b^2*c^5 + 9*a^7*b^3*c^4 + 536*a^7*b^ \\
& 4*c^3 + 612*a^7*b^5*c^2 - 37*a^8*b^2*c^4 - 524*a^8*b^3*c^3 - 354*a^8*b^4*c^ \\
& 2 + 239*a^9*b^2*c^3 + 145*a^9*b^3*c^2 - 47*a^10*b^2*c^2))/a^8 - (((2048*\tan \\
& (x/2)*(8*a^14*c + 8*a^4*b^11 - 24*a^5*b^10 + 36*a^6*b^9 - 52*a^7*b^8 + 61*a \\
& ^8*b^7 - 49*a^9*b^6 + 33*a^10*b^5 - 17*a^11*b^4 + 6*a^12*b^3 - 2*a^13*b^2 + \\
& 72*a^8*c^7 - 136*a^9*c^6 - 192*a^10*c^5 + 168*a^11*c^4 + 80*a^12*c^3 - 64*
\end{aligned}$$

$$\begin{aligned}
& a^{13}c^2 - 8a^4b^{10}c - 72a^5b^9c + 244a^6b^8c - 308a^7b^7c - 88 \\
& a^8b^6c + 375a^8b^6c + 496a^9b^5c^5 - 416a^9b^5c - 16a^{10}b^4c^4 \\
& + 295a^{10}b^4c - 328a^{11}b^3c^3 - 178a^{11}b^3c + 184a^{12}b^2c^2 + 84a^{12} \\
& b^2c + 8a^4b^8c^3 - 8a^4b^9c^2 - 72a^5b^6c^4 + 56a^5b^7c^3 \\
& + 112a^5b^8c^2 + 220a^6b^4c^5 - 140a^6b^5c^4 - 424a^6b^6c^3 + 8 \\
& 0a^6b^7c^2 - 256a^7b^2c^6 + 192a^7b^3c^5 + 416a^7b^4c^4 + 572a^7 \\
& b^5c^3 - 732a^7b^6c^2 + 64a^8b^2c^5 - 1152a^8b^3c^4 + 521a^8b^4 \\
& c^3 + 779a^8b^5c^2 + 234a^9b^2c^4 - 494a^9b^3c^3 - 723a^9b^4 \\
& c^2 + 180a^{10}b^2c^3 + 770a^{10}b^3c^2 - 416a^{11}b^2c^2 - 24a^{13}b^2c \\
& ))/a^8 + (((2048*(26a^9b^7 - 12a^8b^8 - 18a^{10}b^6 + 6a^{11}b^5 - 2a^{12} \\
& b^4 + 48a^{10}c^6 + 176a^{11}c^5 + 176a^{12}c^4 + 16a^{13}c^3 - 32a^{14}c^2 + 20a^8 \\
& b^7c + 74a^9b^6c - 144a^{10}b^5c - 192a^{10}b^5c - 352a^{11}b^4c^4 + 122a^{11} \\
& b^4c - 144a^{12}b^3c^3 - 40a^{12}b^3c + 64a^{13}b^2c^2 + 16a^{13}b^2c + 8a^8 \\
& b^4c^4 - 20a^8b^5c^3 + 4a^8b^6c^2 - 44a^9b^2c^5 + 116a^9b^3c^4 + 10a^9b^4c^3 - 182 \\
& a^9b^5c^2 - 148a^{10}b^2c^4 + 496a^{10}b^3c^3 - 50a^{10}b^4c^2 - 260a^{11}b^2c^3 + 388a^{11} \\
& b^3c^2 - 204a^{12}b^2c^2))/a^8 - (1024*\tan(x/2)*(a^2 - 2a*c + 2*b^2)*(32a^{16} \\
& c + 8a^{10}b^7 - 24a^{11}b^6 + 32a^{12}b^5 - 32a^{13}b^4 + 24a^{14}b^3 - 8a^{15}b^2 + 96a^{12} \\
& c^5 + 64a^{13}c^4 - 128a^{14}c^3 - 64a^{15}c^2 - 8a^{10}b^6c - 56a^{11}b^5c - 32a^{12}b^4c + 184a^{12} \\
& b^4c + 352a^{13}b^3c^3 - 200a^{13}b^3c + 288a^{14}b^2c^2 + 144a^{14}b^2c + 8a^{10}b^4c^3 - 8a^{11} \\
& b^5c^2 - 56a^{11}b^2c^4 + 40a^{11}b^3c^3 + 96a^{11}b^4c^2 - 272a^{12}b^2c^3 + 8a^{12}b^3c^2 - 320a^{13} \\
& b^2c^2 - 96a^{15}b^2c))/a^{11}*(a^2 - 2a*c + 2*b^2))/(2a^3))*(a^2 - 2a*c + 2*b^2))/(2a^3) \\
& ))/(2a^3))*(a^2 - 2a*c + 2*b^2))/(2a^3) + (((2048*\tan(x/2)*(4a*b^{12} + 2 \\
& 0b^{12}c - 4b^{13} - 4a^2b^{11} + 4a^3b^{10} - a^4b^9 + a^5b^8 + 12a^4c^9 - 44a^5c^8 + 2a^6c^7 + 38a^7c^6 - 18a^8c^5 + 2a^9c^4 + 4b^8c^5 - 20b^9c^4 + 40b^{10}c^3 - 40b^{11}c^2 - 24a*b^6c^6 + 136a*b^7c^5 - 300a*b^8c^4 + 320a*b^9c^3 - 160a*b^{10}c^2 - 20a^2b^{10}c + 20a^3b^9c - 92a^4b^8c - 31a^4b^8c + 168a^5b^7c + 4a^5b^7c + 2a^6b^6c^6 - 8a^6b^6c - 84a^7b^5c + 26a^8b^4c + 44a^2b^4c^7 - 300a^2b^5c^6 + 764a^2b^6c^5 - 900a^2b^7c^4 + 460a^2b^8c^3 - 44a^2b^9c^2 - 32a^3b^2c^8 + 272a^3b^3c^7 - 840a^3b^4c^6 + 1156a^3b^5c^5 - 660a^3b^6c^4 + 72a^3b^7c^3 + 8a^3b^8c^2 + 384a^4b^2c^7 - 704a^4b^3c^6 + 541a^4b^4c^5 - 149a^4b^5c^4 + 34a^4b^6c^3 + 6a^4b^7c^2 - 204a^5b^2c^6 + 96a^5b^3c^5 + 41a^5b^4c^4 - 132a^5b^5c^3 + 82a^5b^6c^2 - 90a^6b^2c^5 + 174a^6b^3c^4 - 104a^6b^4c^3 + 8a^6b^5c^2 + 82a^7b^2c^4 - 40a^7b^3c^3 + 20a^7b^4c^2 - 16a^8b^2c^3 + 24a*b^{11}c))/a^8 - (((2048*(26a^3b^{11} - 12a^2b^{12} - 30a^4b^{10} + 29a^5b^9 - 20a^6b^8 + 10a^7b^7 - 4a^8b^6 + a^9b^5 + 12a^6c^8 + 88a^7c^7 + 72a^8c^6 - 44a^9c^5 - 28a^{10}c^4 + 12a^{11}c^3 + 20a^2b^{11}c + 98a^3b^{10}c - 228a^4b^9c + 251a^5b^8c - 96a^6b^7c - 238a^6b^7c - 200a^7b^6c + 154a^7b^6c + 100a^8b^5c - 72a^8b^5c + 112a^9b^4c + 27a^9b^4c - 68a^{10}b^3c - 6a^{10}b^3c + 8a^{11}b^2c + 8a^2b^8c^4 - 20a^2b^9c^3 + 4a^2b^{10}c^2 - 60a^3b^6c^5 + 156*
\end{aligned}$$

$$\begin{aligned} & a^3b^7c^4 + 2a^3b^8c^3 - 222a^3b^9c^2 + 136a^4b^4c^6 - 388a^4b^5c^5 - 152a^4b^6c^4 + 856a^4b^7c^3 - 202a^4b^8c^2 - 100a^5b^2c^7 + 364a^5b^3c^6 + 394a^5b^4c^5 - 1362a^5b^5c^4 - 115a^5b^6c^3 + 635a^5b^7c^2 - 340a^6b^2c^6 + 904a^6b^3c^5 + 583a^6b^4c^4 - 564a^6b^5c^3 - 655a^6b^6c^2 - 399a^7b^2c^5 + 9a^7b^3c^4 + 536a^7b^4c^3 + 612a^7b^5c^2 - 37a^8b^2c^4 - 524a^8b^3c^3 - 354a^8b^4c^2 + 239a^9b^2c^3 + 145a^9b^3c^2 - 47a^{10}b^2c^2)/a^8 + ((2048\tan(x/2)*(8a^{14}c + 8a^4b^{11} - 24a^5b^{10} + 36a^6b^9 - 52a^7b^8 + 61a^8b^7 - 49a^9b^6 + 33a^{10}b^5 - 17a^{11}b^4 + 6a^{12}b^3 - 2a^{13}b^2 + 72a^8c^7 - 136a^9c^6 - 192a^{10}c^5 + 168a^{11}c^4 + 80a^{12}c^3 - 64a^{13}c^2 - 8a^4b^{10}c - 72a^5b^9c + 244a^6b^8c - 308a^7b^7c - 88a^8b^6c + 375a^8b^6c + 496a^9b^5c - 416a^9b^5c - 16a^{10}b^4c + 295a^{10}b^4c - 328a^{11}b^3c - 178a^{11}b^3c + 184a^{12}b^2c + 84a^{12}b^2c + 8a^4b^8c^3 - 8a^4b^9c^2 - 72a^5b^6c^4 + 56a^5b^7c^3 + 112a^5b^8c^2 + 220a^6b^4c^5 - 140a^6b^5c^4 - 424a^6b^6c^3 + 80a^6b^7c^2 - 256a^7b^2c^6 + 192a^7b^3c^5 + 416a^7b^4c^4 + 572a^7b^5c^3 - 732a^7b^6c^2 + 64a^8b^2c^5 - 1152a^8b^3c^4 + 521a^8b^4c^3 + 779a^8b^5c^2 + 234a^9b^2c^4 - 494a^9b^3c^3 - 723a^9b^4c^2 + 180a^{10}b^2c^3 + 770a^{10}b^3c^2 - 416a^{11}b^2c^2 - 24a^{13}b^2c)/a^8 - (((2048*(26a^9b^7 - 12a^8b^8 - 18a^{10}b^6 + 6a^{11}b^5 - 2a^{12}b^4 + 48a^{10}c^6 + 176a^{11}c^5 + 176a^{12}c^4 + 16a^{13}c^3 - 32a^{14}c^2 + 20a^8b^7c + 74a^9b^6c - 144a^{10}b^5c - 192a^{10}b^5c - 352a^{11}b^4c + 122a^{11}b^4c - 144a^{12}b^3c - 40a^{12}b^3c + 64a^{13}b^2c + 16a^{13}b^2c + 8a^8b^4c^4 - 20a^8b^5c^3 + 4a^8b^6c^2 - 44a^9b^2c^5 + 116a^9b^3c^4 + 10a^9b^4c^3 - 182a^9b^5c^2 - 148a^{10}b^2c^4 + 496a^{10}b^3c^3 - 50a^{10}b^4c^2 - 260a^{11}b^2c^3 + 388a^{11}b^3c^2 - 204a^{12}b^2c^2))/a^8 + (1024\tan(x/2)*(a^2 - 2ac + 2b^2)*(32a^{16}c + 8a^{10}b^7 - 24a^{11}b^6 + 32a^{12}b^5 - 32a^{13}b^4 + 24a^{14}b^3 - 8a^{15}b^2 + 96a^{12}c^5 + 64a^{13}c^4 - 128a^{14}c^3 - 64a^{15}c^2 - 8a^{10}b^6c - 56a^{11}b^5c - 32a^{12}b^4c + 184a^{12}b^4c + 352a^{13}b^3c - 200a^{13}b^3c + 288a^{14}b^2c + 144a^{14}b^2c + 8a^{10}b^4c^3 - 8a^{10}b^5c^2 - 56a^{11}b^2c^4 + 40a^{11}b^3c^3 + 96a^{11}b^4c^2 - 272a^{12}b^2c^3 + 8a^{12}b^3c^2 - 320a^{13}b^2c^2 - 96a^{15}b^2c))/a^{11}*(a^2 - 2ac + 2b^2)/(2a^3)*(a^2 - 2ac + 2b^2)/(2a^3)*(a^2 - 2ac + 2b^2)/(2a^3)*(a^2 - 2ac + 2b^2)/(2a^3)*(a^2 - 2ac + 2b^2)*1i)/a^3 \end{aligned}$$



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# CHAPTER 4

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## APPENDIX

4.1 Listing of Grading functions . . . . . 353

### 4.1 Listing of Grading functions

The following are the current version of the grading functions used for grading the quality of the antiderivative with reference to the optimal antiderivative included in the test suite.

There is a version for Maple and for Mathematica/Rubi. There is a version for grading Sympy and version for use with Sagemath.

The following are links to the current source code.

The following are the listings of source code of the grading functions.

#### Mathematica and Rubi grading function

```
(* Original version thanks to Albert Rich emailed on 03/21/2017 *)
(* ::Package:: *)

(* Nasser: April 7, 2022. add second output which gives reason for the grade *)
(*      Small rewrite of logic in main function to make it*)
(*      match Maple's logic. No change in functionality otherwise*)

(* ::Subsection:: *)
(*GradeAntiderivative[result,optimal]*)

(* ::Text:: *)
(*If result and optimal are mathematical expressions, *)
```

```

(*      GradeAntiderivative[result,optimal] returns*)
(* "F" if the result fails to integrate an expression that*)
(*   is integrable*)
(* "C" if result involves higher level functions than necessary*)
(* "B" if result is more than twice the size of the optimal*)
(*   antiderivative*)
(* "A" if result can be considered optimal*)

GradeAntiderivative[result_,optimal_] := Module[{expnResult,expnOptimal,leafCountResult,leafCo
  expnResult = ExpnType[result];
  expnOptimal = ExpnType[optimal];
  leafCountResult = LeafCount[result];
  leafCountOptimal = LeafCount[optimal];

  (*Print["expnResult=",expnResult," expnOptimal=",expnOptimal];*)
  If[expnResult<=expnOptimal,
    If[Not[FreeQ[result,Complex]], (*result contains complex*)
      If[Not[FreeQ[optimal,Complex]], (*optimal contains complex*)
        If[leafCountResult<=2*leafCountOptimal,
          finalresult={"A",""}
          ,(*ELSE*)
          finalresult={"B","Both result and optimal contain complex but leaf count is
        ]
      ,(*ELSE*)
      finalresult={"C","Result contains complex when optimal does not."}
    ]
    ,(*ELSE*)(*result does not contains complex*)
    If[leafCountResult<=2*leafCountOptimal,
      finalresult={"A",""}
      ,(*ELSE*)
      finalresult={"B","Leaf count is larger than twice the leaf count of optimal. $"}
    ]
  ]
  ,(*ELSE*) (*expnResult>expnOptimal*)
  If[FreeQ[result,Integrate] && FreeQ[result,Int],
    finalresult={"C","Result contains higher order function than in optimal. Order "<>
    ,
    finalresult={"F","Contains unresolved integral."}
  ]
];

  finalresult
]

(* ::Text:: *)
(*The following summarizes the type number assigned an *)

```

```

(*expression based on the functions it involves*)
(*1 = rational function*)
(*2 = algebraic function*)
(*3 = elementary function*)
(*4 = special function*)
(*5 = hyperpergeometric function*)
(*6 = appell function*)
(*7 = rootsum function*)
(*8 = integrate function*)
(*9 = unknown function*)

```

```

ExpnType[expn_] :=
  If[AtomQ[expn],
    1,
    If[ListQ[expn],
      Max[Map[ExpnType, expn]],
      If[Head[expn]===Power,
        If[IntegerQ[expn[[2]]],
          ExpnType[expn[[1]]],
          If[Head[expn[[2]]]===Rational,
            If[IntegerQ[expn[[1]]] || Head[expn[[1]]]===Rational,
              1,
              Max[ExpnType[expn[[1]], 2]],
            Max[ExpnType[expn[[1]], ExpnType[expn[[2]], 3]],
          If[Head[expn]===Plus || Head[expn]===Times,
            Max[ExpnType[First[expn]], ExpnType[Rest[expn]]],
          If[ElementaryFunctionQ[Head[expn]],
            Max[3, ExpnType[expn[[1]]],
          If[SpecialFunctionQ[Head[expn]],
            Apply[Max, Append[Map[ExpnType, Apply[List, expn]], 4]],
          If[HypergeometricFunctionQ[Head[expn]],
            Apply[Max, Append[Map[ExpnType, Apply[List, expn]], 5]],
          If[AppellFunctionQ[Head[expn]],
            Apply[Max, Append[Map[ExpnType, Apply[List, expn]], 6]],
          If[Head[expn]===RootSum,
            Apply[Max, Append[Map[ExpnType, Apply[List, expn]], 7]],
          If[Head[expn]===Integrate || Head[expn]===Int,
            Apply[Max, Append[Map[ExpnType, Apply[List, expn]], 8]],
          9]]]]]]]]]]

```

```

ElementaryFunctionQ[func_] :=
  MemberQ[{
    Exp, Log,
    Sin, Cos, Tan, Cot, Sec, Csc,
    ArcSin, ArcCos, ArcTan, ArcCot, ArcSec, ArcCsc,

```

```

    Sinh, Cosh, Tanh, Coth, Sech, Csch,
    ArcSinh, ArcCosh, ArcTanh, ArcCoth, ArcSech, ArcCsch
  }, func]

SpecialFunctionQ[func_] :=
  MemberQ[{
    Erf, Erfc, Erfi,
    FresnelS, FresnelC,
    ExpIntegralE, ExpIntegralEi, LogIntegral,
    SinIntegral, CosIntegral, SinhIntegral, CoshIntegral,
    Gamma, LogGamma, PolyGamma,
    Zeta, PolyLog, ProductLog,
    EllipticF, EllipticE, EllipticPi
  }, func]

HypergeometricFunctionQ[func_] :=
  MemberQ[{Hypergeometric1F1, Hypergeometric2F1, HypergeometricPFQ}, func]

AppellFunctionQ[func_] :=
  MemberQ[{AppellF1}, func]

```

## Maple grading function

```

# File: GradeAntiderivative.mpl
# Original version thanks to Albert Rich emailed on 03/21/2017

#Nasser 03/22/2017 Use Maple leaf count instead since buildin
#Nasser 03/23/2017 missing 'ln' for ElementaryFunctionQ added
#Nasser 03/24/2017 corrected the check for complex result
#Nasser 10/27/2017 check for leafsize and do not call ExpnType()
#
# if leaf size is "too large". Set at 500,000
#Nasser 12/22/2019 Added debug flag, added 'dilog' to special functions
#
# see problem 156, file Apostol_Problems
#Nasser 4/07/2022 add second output which gives reason for the grade

GradeAntiderivative := proc(result, optimal)
local leaf_count_result,
      leaf_count_optimal,
      ExpnType_result,
      ExpnType_optimal,
      debug:=false;

      leaf_count_result:=leafcount(result);

```

```

#do NOT call ExpnType() if leaf size is too large. Recursion problem
if leaf_count_result > 500000 then
    return "B","result has leaf size over 500,000. Avoiding possible recursion issues
fi;

leaf_count_optimal := leafcount(optimal);
ExpnType_result := ExpnType(result);
ExpnType_optimal := ExpnType(optimal);

if debug then
    print("ExpnType_result",ExpnType_result," ExpnType_optimal=",ExpnType_optimal);
fi;

# If result and optimal are mathematical expressions,
# GradeAntiderivative[result,optimal] returns
# "F" if the result fails to integrate an expression that
# is integrable
# "C" if result involves higher level functions than necessary
# "B" if result is more than twice the size of the optimal
# antiderivative
# "A" if result can be considered optimal

#This check below actually is not needed, since I only
#call this grading only for passed integrals. i.e. I check
#for "F" before calling this. But no harm of keeping it here.
#just in case.

if not type(result,freeof('int')) then
    return "F","Result contains unresolved integral";
fi;

if ExpnType_result<=ExpnType_optimal then
    if debug then
        print("ExpnType_result<=ExpnType_optimal");
    fi;
    if is_contains_complex(result) then
        if is_contains_complex(optimal) then
            if debug then
                print("both result and optimal complex");
            fi;
            if leaf_count_result<=2*leaf_count_optimal then
                return "A"," ";
            else
                return "B",cat("Both result and optimal contain complex but leaf count of
                                convert(leaf_count_result,string)," vs. $2 ("
```

```

                                convert(leaf_count_optimal,string)," ) = ",convert(2*leaf_c
    end if
else #result contains complex but optimal is not
    if debug then
        print("result contains complex but optimal is not");
    fi;
    return "C","Result contains complex when optimal does not.";
fi;
else # result do not contain complex
    # this assumes optimal do not as well. No check is needed here.
    if debug then
        print("result do not contain complex, this assumes optimal do not as well")
    fi;
    if leaf_count_result<=2*leaf_count_optimal then
        if debug then
            print("leaf_count_result<=2*leaf_count_optimal");
        fi;
        return "A"," ";
    else
        if debug then
            print("leaf_count_result>2*leaf_count_optimal");
        fi;
        return "B",cat("Leaf count of result is larger than twice the leaf count of opt
                                convert(leaf_count_result,string)," $ vs. $2(",
                                convert(leaf_count_optimal,string)," )=",convert(2*leaf_coun
    fi;
fi;
else #ExpnType(result) > ExpnType(optimal)
    if debug then
        print("ExpnType(result) > ExpnType(optimal)");
    fi;
    return "C",cat("Result contains higher order function than in optimal. Order ",
                    convert(ExpnType_result,string)," vs. order ",
                    convert(ExpnType_optimal,string),".");
fi;

end proc:

#
# is_contains_complex(result)
# takes expressions and returns true if it contains "I" else false
#
#Nasser 032417
is_contains_complex:= proc(expression)
    return (has(expression,I));
end proc:

```

```

# The following summarizes the type number assigned an expression
# based on the functions it involves
# 1 = rational function
# 2 = algebraic function
# 3 = elementary function
# 4 = special function
# 5 = hyperpergeometric function
# 6 = appell function
# 7 = rootsum function
# 8 = integrate function
# 9 = unknown function

ExpnType := proc(expn)
  if type(expn,'atomic') then
    1
  elif type(expn,'list') then
    apply(max,map(ExpnType,expn))
  elif type(expn,'sqrt') then
    if type(op(1,expn),'rational') then
      1
    else
      max(2,ExpnType(op(1,expn)))
    end if
  elif type(expn,'^^') then
    if type(op(2,expn),'integer') then
      ExpnType(op(1,expn))
    elif type(op(2,expn),'rational') then
      if type(op(1,expn),'rational') then
        1
      else
        max(2,ExpnType(op(1,expn)))
      end if
    else
      max(3,ExpnType(op(1,expn)),ExpnType(op(2,expn)))
    end if
  elif type(expn,'+`) or type(expn,'*`) then
    max(ExpnType(op(1,expn)),max(ExpnType(rest(expn))))
  elif ElementaryFunctionQ(op(0,expn)) then
    max(3,ExpnType(op(1,expn)))
  elif SpecialFunctionQ(op(0,expn)) then
    max(4,apply(max,map(ExpnType,[op(expn)])))
  elif HypergeometricFunctionQ(op(0,expn)) then
    max(5,apply(max,map(ExpnType,[op(expn)])))
  elif AppellFunctionQ(op(0,expn)) then
    max(6,apply(max,map(ExpnType,[op(expn)])))
  elif op(0,expn)='int' then
    max(8,apply(max,map(ExpnType,[op(expn)]))) else

```

```

9
end if
end proc:

ElementaryFunctionQ := proc(func)
  member(func, [
    exp, log, ln,
    sin, cos, tan, cot, sec, csc,
    arcsin, arccos, arctan, arccot, arcsec, arccsc,
    sinh, cosh, tanh, coth, sech, csch,
    arcsinh, arccosh, arctanh, arccoth, arcsech, arccsch])
end proc:

SpecialFunctionQ := proc(func)
  member(func, [
    erf, erfc, erfi,
    FresnelS, FresnelC,
    Ei, Ei, Li, Si, Ci, Shi, Chi,
    GAMMA, lnGAMMA, Psi, Zeta, polylog, dilog, LambertW,
    EllipticF, EllipticE, EllipticPi])
end proc:

HypergeometricFunctionQ := proc(func)
  member(func, [Hypergeometric1F1, hypergeom, HypergeometricPFQ])
end proc:

AppellFunctionQ := proc(func)
  member(func, [AppellF1])
end proc:

# u is a sum or product. rest(u) returns all but the
# first term or factor of u.
rest := proc(u) local v;
  if nops(u)=2 then
    op(2,u)
  else
    apply(op(0,u), op(2..nops(u), u))
  end if
end proc:

#leafcount(u) returns the number of nodes in u.
#Nasser 3/23/17 Replaced by build-in leafCount from package in Maple
leafcount := proc(u)
  MmaTranslator[Mma][LeafCount](u);
end proc:

```



## Sympy grading function

```

#Dec 24, 2019. Nasser M. Abbasi:
#           Port of original Maple grading function by
#           Albert Rich to use with Sympy/Python
#Dec 27, 2019 Nasser. Added `RootSum`. See problem 177, Timofeev file
#           added 'exp_polar'
from sympy import *

def leaf_count(expr):
    #sympy do not have leaf count function. This is approximation
    return round(1.7*count_ops(expr))

def is_sqrt(expr):
    if isinstance(expr,Pow):
        if expr.args[1] == Rational(1,2):
            return True
        else:
            return False
    else:
        return False

def is_elementary_function(func):
    return func in [exp,log,ln,sin,cos,tan,cot,sec,csc,
                    asin,acos,atan,acot,asec,acsc,sinh,cosh,tanh,coth,sech,csch,
                    asinh,acosh,atanh,acoth,asech,acsch
                    ]

def is_special_function(func):
    return func in [ erf,erfc,erfi,
                    fresnels,fresnelc,Ei,Ei,Li,Si,Ci,Shi,Chi,
                    gamma,loggamma,digamma,zeta,polylog,LambertW,
                    elliptic_f,elliptic_e,elliptic_pi,exp_polar
                    ]

def is_hypergeometric_function(func):
    return func in [hyper]

def is_appell_function(func):
    return func in [appellf1]

def is_atom(expn):
    try:
        if expn.isAtom or isinstance(expn,int) or isinstance(expn,float):
            return True
        else:
            return False

```

```

except AttributeError as error:
    return False

def expnType(expn):
    debug=False
    if debug:
        print("expn=",expn,"type(expn)=",type(expn))

    if is_atom(expn):
        return 1
    elif isinstance(expn,list):
        return max(map(expnType, expn)) #apply(max,map(ExpnType,expn))
    elif is_sqrt(expn):
        if isinstance(expn.args[0],Rational): #type(op(1,expn),'rational')
            return 1
        else:
            return max(2,expnType(expn.args[0])) #max(2,ExpnType(op(1,expn)))
    elif isinstance(expn,Pow): #type(expn,'^')
        if isinstance(expn.args[1],Integer): #type(op(2,expn),'integer')
            return expnType(expn.args[0]) #ExpnType(op(1,expn))
        elif isinstance(expn.args[1],Rational): #type(op(2,expn),'rational')
            if isinstance(expn.args[0],Rational): #type(op(1,expn),'rational')
                return 1
            else:
                return max(2,expnType(expn.args[0])) #max(2,ExpnType(op(1,expn)))
        else:
            return max(3,expnType(expn.args[0]),expnType(expn.args[1])) #max(3,ExpnType(op(1,expn)),ExpnTy
    elif isinstance(expn,Add) or isinstance(expn,Mul): #type(expn,'+') or type(expn,'*')
        m1 = expnType(expn.args[0])
        m2 = expnType(list(expn.args[1:]))
        return max(m1,m2) #max(ExpnType(op(1,expn)),max(ExpnType(rest(expn))))
    elif is_elementary_function(expn.func): #ElementaryFunctionQ(op(0,expn))
        return max(3,expnType(expn.args[0])) #max(3,ExpnType(op(1,expn)))
    elif is_special_function(expn.func): #SpecialFunctionQ(op(0,expn))
        m1 = max(map(expnType, list(expn.args)))
        return max(4,m1) #max(4,apply(max,map(ExpnType,[op(expn)])))
    elif is_hypergeometric_function(expn.func): #HypergeometricFunctionQ(op(0,expn))
        m1 = max(map(expnType, list(expn.args)))
        return max(5,m1) #max(5,apply(max,map(ExpnType,[op(expn)])))
    elif is_appell_function(expn.func):
        m1 = max(map(expnType, list(expn.args)))
        return max(6,m1) #max(5,apply(max,map(ExpnType,[op(expn)])))
    elif isinstance(expn,RootSum):
        m1 = max(map(expnType, list(expn.args))) #Apply[Max,Append[Map[ExpnType,Apply[List,expn]],7]],
        return max(7,m1)
    elif str(expn).find("Integral") != -1:

```

```

    m1 = max(map(expnType, list(expn.args)))
    return max(8,m1) #max(5,apply(max,map(ExpnType,[op(expn)])))
else:
    return 9

#main function
def grade_antiderivative(result,optimal):

    #print ("Enter grade_antiderivative for sagemath")
    #print("Enter grade_antiderivative, result=",result," optimal=",optimal)

    leaf_count_result = leaf_count(result)
    leaf_count_optimal = leaf_count(optimal)

    #print("leaf_count_result=",leaf_count_result)
    #print("leaf_count_optimal=",leaf_count_optimal)

    expnType_result = expnType(result)
    expnType_optimal = expnType(optimal)

    if str(result).find("Integral") != -1:
        grade = "F"
        grade_annotation = ""
    else:
        if expnType_result <= expnType_optimal:
            if result.has(I):
                if optimal.has(I): #both result and optimal complex
                    if leaf_count_result <= 2*leaf_count_optimal:
                        grade = "A"
                        grade_annotation = ""
                    else:
                        grade = "B"
                        grade_annotation = "Both result and optimal contain complex but leaf count of result is larger than twice the leaf count of optimal."
                else: #result contains complex but optimal is not
                    grade = "C"
                    grade_annotation = "Result contains complex when optimal does not."
            else: # result do not contain complex, this assumes optimal do not as well
                if leaf_count_result <= 2*leaf_count_optimal:
                    grade = "A"
                    grade_annotation = ""
                else:
                    grade = "B"
                    grade_annotation = "Leaf count of result is larger than twice the leaf count of optimal. "+str(leaf_count_result)+"/"+str(leaf_count_optimal)
            else:
                grade = "C"
                grade_annotation = "Result contains higher order function than in optimal. Order "+str(ExpnType_result)+"/"+str(ExpnType_optimal)

```

```

# print("Before returning. grade=", grade, " grade_annotation=", grade_annotation)

return grade, grade_annotation

```

## SageMath grading function

```

# Dec 24, 2019. Nasser: Ported original Maple grading function by
# Albert Rich to use with Sagemath. This is used to
# grade Fricas, Giac and Maxima results.
# Dec 24, 2019. Nasser: Added 'exp_integral_e' and 'sng', 'sin_integral'
# 'arctan2', 'floor', 'abs', 'log_integral'
# June 4, 2022 Made default grade_annotation "none" instead of "" due
# issue later when reading the file.
# July 14, 2022. Added ellipticF. This is until they fix sagemath, then remove it.

from sage.all import *
from sage.symbolic.operators import add_vararg, mul_vararg

debug=False;

def tree_size(expr):
    r"""
    Return the tree size of this expression.
    """
    # print("Enter tree_size, expr is ", expr)

    if expr not in SR:
        # deal with lists, tuples, vectors
        return 1 + sum(tree_size(a) for a in expr)
    expr = SR(expr)
    x, aa = expr.operator(), expr.operands()
    if x is None:
        return 1
    else:
        return 1 + sum(tree_size(a) for a in aa)

def is_sqrt(expr):
    if expr.operator() == operator.pow: # isinstance(expr, Pow):
        if expr.operands()[1] == 1/2: # expr.args[1] == Rational(1,2):
            if debug: print("expr is sqrt")
            return True
        else:
            return False
    else:
        return False

```

```

def is_elementary_function(func):
    #debug=False
    m = func.name() in ['exp','log','ln',
        'sin','cos','tan','cot','sec','csc',
        'arcsin','arccos','arctan','arccot','arcsec','arccsc',
        'sinh','cosh','tanh','coth','sech','csch',
        'arcsinh','arccosh','arctanh','arccoth','arcsech','arccsch','sgn',
        'arctan2','floor','abs'
    ]
    if debug:
        if m:
            print ("func ", func , " is elementary_function")
        else:
            print ("func ", func , " is NOT elementary_function")

    return m

def is_special_function(func):
    #debug=False
    if debug:
        print ("type(func)=", type(func))

    m= func.name() in ['erf','erfc','erfi','fresnel_sin','fresnel_cos','Ei',
        'Ei','Li','Si','sin_integral','Ci','cos_integral','Shi','sinh_integral',
        'Chi','cosh_integral','gamma','log_gamma','psi,zeta',
        'polylog','lambert_w','elliptic_f','elliptic_e','ellipticF',
        'elliptic_pi','exp_integral_e','log_integral']

    if debug:
        print ("m=",m)
        if m:
            print ("func ", func , " is special_function")
        else:
            print ("func ", func , " is NOT special_function")

    return m

def is_hypergeometric_function(func):
    return func.name() in ['hypergeometric','hypergeometric_M','hypergeometric_U']

def is_appell_function(func):
    return func.name() in ['hypergeometric']    #[appellf1] can't find this in sagemath

```

```

def is_atom(expn):

    #debug=False
    if debug:
        print ("Enter is_atom, expn=",expn)

    if not hasattr(expn, 'parent'):
        return False

    #thanks to answer at https://ask.sagemath.org/question/49179/what-is-sagemath-equivalent-to-atomic-type
    try:
        if expn.parent() is SR:
            return expn.operator() is None
        if expn.parent() in (ZZ, QQ, AA, QQbar):
            return expn in expn.parent() # Should always return True
        if hasattr(expn.parent(), "base_ring") and hasattr(expn.parent(), "gens"):
            return expn in expn.parent().base_ring() or expn in expn.parent().gens()

        return False

    except AttributeError as error:
        print("Exception,AttributeError in is_atom")
        print ("caught exception" , type(error).__name__ )
        return False

def expnType(expn):

    if debug:
        print (">>>>>Enter expnType, expn=", expn)
        print (">>>>>is_atom(expn)=", is_atom(expn))

    if is_atom(expn):
        return 1
    elif type(expn)==list: #isinstance(expn,list):
        return max(map(expnType, expn)) #apply(max,map(ExpnType,expn))
    elif is_sqrt(expn):
        if type(expn.operands()[0])==Rational: #type(isinstance(expn.args[0],Rational):
            return 1
        else:
            return max(2,expnType(expn.operands()[0])) #max(2,expnType(expn.args[0]))
    elif expn.operator() == operator.pow: #isinstance(expn,Pow)
        if type(expn.operands()[1])==Integer: #isinstance(expn.args[1],Integer)
            return expnType(expn.operands()[0]) #expnType(expn.args[0])
        elif type(expn.operands()[1])==Rational: #isinstance(expn.args[1],Rational)
            if type(expn.operands()[0])==Rational: #isinstance(expn.args[0],Rational)

```

```

    return 1
  else:
    return max(2,expnType(expn.operands()[0])) #max(2,expnType(expn.args[0]))
  else:
    return max(3,expnType(expn.operands()[0]),expnType(expn.operands()[1])) #max(3,expnType(expn.
elif expn.operator() == add_vararg or expn.operator() == mul_vararg: #isinstance(expn,Add) or isinst
    m1 = expnType(expn.operands()[0]) #expnType(expn.args[0])
    m2 = expnType(expn.operands()[1:]) #expnType(list(expn.args[1:]))
    return max(m1,m2) #max(ExpnType(op(1,expn)),max(ExpnType(rest(expn))))
elif is_elementary_function(expn.operator()): #is_elementary_function(expn.func)
    return max(3,expnType(expn.operands()[0]))
elif is_special_function(expn.operator()): #is_special_function(expn.func)
    m1 = max(map(expnType, expn.operands())) #max(map(expnType, list(expn.args)))
    return max(4,m1) #max(4,m1)
elif is_hypergeometric_function(expn.operator()): #is_hypergeometric_function(expn.func)
    m1 = max(map(expnType, expn.operands())) #max(map(expnType, list(expn.args)))
    return max(5,m1) #max(5,m1)
elif is_appell_function(expn.operator()):
    m1 = max(map(expnType, expn.operands())) #max(map(expnType, list(expn.args)))
    return max(6,m1) #max(6,m1)
elif str(expn).find("Integral") != -1: #this will never happen, since it
    #is checked before calling the grading function that is passed.
    #but kept it here.
    m1 = max(map(expnType, expn.operands())) #max(map(expnType, list(expn.args)))
    return max(8,m1) #max(5,apply(max,map(ExpnType,[op(expn)])))
else:
    return 9

#main function
def grade_antiderivative(result,optimal):

    if debug:
        print ("Enter grade_antiderivative for sagemath")
        print("Enter grade_antiderivative, result=",result)
        print("Enter grade_antiderivative, optimal=",optimal)
        print("type(anti)=",type(result))
        print("type(optimal)=",type(optimal))

    leaf_count_result = tree_size(result) #leaf_count(result)
    leaf_count_optimal = tree_size(optimal) #leaf_count(optimal)

    #if debug: print ("leaf_count_result=", leaf_count_result, "leaf_count_optimal=",leaf_count_optimal)

    expnType_result = expnType(result)
    expnType_optimal = expnType(optimal)

```

```

if debug: print ("expnType_result=", expnType_result, "expnType_optimal=",expnType_optimal)

if expnType_result <= expnType_optimal:
    if result.has(I):
        if optimal.has(I): #both result and optimal complex
            if leaf_count_result <= 2*leaf_count_optimal:
                grade = "A"
                grade_annotation = "none"
            else:
                grade = "B"
                grade_annotation = "Both result and optimal contain complex but leaf count of result is larger than"
        else: #result contains complex but optimal is not
            grade = "C"
            grade_annotation = "Result contains complex when optimal does not."
    else: # result do not contain complex, this assumes optimal do not as well
        if leaf_count_result <= 2*leaf_count_optimal:
            grade = "A"
            grade_annotation = "none"
        else:
            grade = "B"
            grade_annotation = "Leaf count of result is larger than twice the leaf count of optimal. " + str(leaf_c

else:
    grade = "C"
    grade_annotation = "Result contains higher order function than in optimal. Order " + str(expnType_result

print("Before returning. grade=",grade, " grade_annotation=",grade_annotation)

return grade, grade_annotation

```