Let us impose constraints on the range of the variables.

Replace the variable by found expression.

Replace the variable by found expression.

The next system is equivalent to the previous one.

Replace the variable by found expression.

The next system is equivalent to the previous one.

Replace the variable by found expression.

Replace the variable by found expression.

Replace the variable by found expression.

The next system is equivalent to the previous one.

Now we transform the equation

Now we use the property of powers.

Now we use the property of powers.

Now we transform the equation

Now we use the property of powers.

Now we use the property of powers.

Let us use the rule for multiplying fractions.

Let us reduce the expression.

Let us reduce the expression.

Let us reduce the expression.

Let us reduce the expression.

Now we use the property of powers.

Arrange the terms.

Let us make a substitution of the variables.

Now we transform the equation

Now we transform the equation

Let us change the fractions so they have a common denominator.

Now we add the fractions with equal denominators.

Let us take the negative sign out of the product.

From the equation we find the variable .

We now break the solution into a number of particular cases.

Case .

Replace the variable by found expression.

Replace the fraction with its reciprocal using the rule of division by a fraction.

Let us use the rule for multiplying fractions.

Let us reduce the expression.

Let us reduce the expression.

Now we transform the equation

Now we transform the equation

Let us factor the numerator.

Let us reduce the expression.

Let us factor the numerator.

Let us reduce the expression.

Let us move all the terms to the left-hand side.

Let us alter the signs.

Now we transform the equation

Let us change the fractions so they have a common denominator.

Now we add the fractions with equal denominators.

Now we remove the brackets.

Now we remove the brackets.

Arrange the terms.

Let us factor the numerator.

Now we transform the equation

Now we transform the equation

Now we transform the equation

Let us take out a factor.

Now we transform the equation

We now break the solution into a number of particular cases.

Case .

The next system is equivalent to the previous one.

there is no solution

Case .

From the equation we find the variable .

Replace the variable by found expression.

Let us use the rule for multiplying fractions.

Now we transform the equation

Let us make a substitution of the variables.

The next system is equivalent to the previous one.

Now we transform the equation

Now we remove the brackets.

Now we use the property of powers.

Now we transform the equation

Let us use the property of monotonicity of the logarithmic function.

Replace the variable by found expression.

The next system is equivalent to the previous one.

Now we transform the equation

Let's solve the auxiliary equation.

The next equation is equivalent to the previous one.

The solution of the auxiliary equation is:

The next system is equivalent to the previous one.

Replace the variable by found expression.

The next system is equivalent to the previous one.

Here is the answer to this particular case:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
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Here is the answer to this particular case:

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| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |

Case .

Now we transform the equation

Replace the variable by found expression.

Let us alter the signs.

Now we transform the equation

Now we transform the equation

We now break the solution into a number of particular cases.

Case .

Replace the variable by found expression.

The next system is equivalent to the previous one.

Now we transform the equation

Let us move all the terms to the left-hand side.

since

The next system is equivalent to the previous one.

there is no solution

Case .

Replace the variable by found expression.

Let us take the negative sign out of the product.

Let us alter the signs.

Now we transform the equation

Now we transform the equation

We now break the solution into a number of particular cases.

Case .

Now we transform the equation

Let us move all the terms to the left-hand side.

since

The next system is equivalent to the previous one.

there is no solution

Case .

Now we transform the equation

Let us move all the terms to the left-hand side.

since

The next system is equivalent to the previous one.

there is no solution

Case .

Now we transform the equation

Let us move all the terms to the left-hand side.

since

The next system is equivalent to the previous one.

there is no solution

Case .

Now we transform the equation

Let us move all the terms to the left-hand side.

since

The next system is equivalent to the previous one.

there is no solution

Case .

Now we transform the equation

Let us move all the terms to the left-hand side.

since

The next system is equivalent to the previous one.

there is no solution

there is no solution

Case .

Replace the variable by found expression.

The next system is equivalent to the previous one.

Now we transform the equation

Let us move all the terms to the left-hand side.

since

The next system is equivalent to the previous one.

there is no solution

there is no solution

The final answer is:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |  |
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