

Algebra 2
Unit: Rational Functions
Section: Solving Rational Equations and Inequalities

Tutorial: Solving Rational Equations

Screen 1

In this tutorial, you will learn the steps to solving rational equations. Follow the steps to solve rational equations.

1. Determine the Least Common Denominator or LCD.
2. Multiply both sides of the equation by the LCD.
3. Simplify.
4. Solve

Screen 2

Example one.

Solve the quantity x plus three divided by two x is equal to five divided by eight.

The LCD of two x and eight is eight x .

Multiply both sides by eight x .

Simplify the numerators and denominators.

Use the distributive property and multiply by four.

The final answer is x equal to twelve.

Check your work.

Substitute x equals 12 into the original equation.

Notice that both sides of the equation are five divided by eight so our answer is correct.

Screen 3

Example 2

Solve three z divided by the quantity z minus one plus two z divided by the quantity z minus six is equal to the quantity five z squared minus fifteen z plus twenty divided by the quantity z squared minus seven z plus six.

In order to find the LCD you must first factor z squared minus seven z plus 6 into the quantity z minus one times the quantity z minus six.

The LCD is the quantity z minus one times the quantity z minus six.

Multiply both sides of the equation by the LCD.

Simplify the numerators and denominators.

Use the distributive property.

Subtract five z squared from both sides of the equation.

Next simplify negative eighteen z minus two z .

Add fifteen z to both sides of the equation.

Divide both sides of the equation by negative five.

The final answer is z equal to negative four.

Screen 4

Check your work. Substitute z equal to negative four into our original equation. <pause> Notice that both sides of the equation are equal to sixteen divided by five so our answer is correct.

Screen 5

Now you try.

Solve each of the following problems and then check your work.

1. Solve: the quantity x minus 5 divided by the quantity x minus 8 equals the quantity x plus 1 divided by the quantity x minus 5

X equals 11

2. Solve: the quantity $2x$ plus 3 divided by the quantity x minus 1 minus the quantity $2x$ minus 3 divided by x plus 1 equals 10 divided by the quantity x squared minus 1.

No solution

Slide 6

As a reminder here are the steps to solving rational equations.

1. Determine the Least Common Denominator or LCD.
2. Multiply both sides of the equation by the LCD.
3. Simplify.
4. Solve.