

Solving Equations Containing Rational Expressions

Previously in MTH 098...

How did you solve the following? $\frac{x}{3} + \frac{3x}{4} = \frac{1}{12}$

Do you remember the steps on how to solve these types of equations?

1. Find the LCD (_____)
2. Multiply both sides (all terms) by the _____
3. Simplify by removing all grouping symbols and combining like terms
4. Solve
5. Check

Let's Practice

- Solve $\frac{x}{4} + \frac{4}{5} = \frac{1}{20}$

- Solve $\frac{3w}{5} - 6 = w$

- Solve $\frac{m-2}{3} = \frac{4}{3} + \frac{m}{6}$

- Solve $\frac{x+2}{3} - \frac{x-1}{5} = \frac{1}{15}$

We will apply the same technique to solve equations containing rational expressions.

If there is any variable in the denominator, we will have to make sure to check all possible answers in order to avoid UNDEFINED equation.

Examples:

- Solve $5 + \frac{3}{z} = \frac{11}{2}$

- Solve $2 + \frac{6}{x} = x + 7$

- Solve $\frac{5x}{x-1} = \frac{5}{x-1} + 3$

- Solve $x - \frac{6}{x+3} = \frac{2x}{x+3} + 2$

- Solve $\frac{2}{x+3} + \frac{3}{x-3} = \frac{-2}{x^2-9}$

- Solve $\frac{2t+3}{t-1} - \frac{2}{t+3} = \frac{5-6t}{t^2+2t-3}$

- Solve $\frac{1}{a} + \frac{1}{b} = \frac{1}{x}$ for x

- Solve $\frac{1}{y} + \frac{1}{3} = \frac{1}{x}$ for y