

Lesson 48 Objective: SWBAT solve rational equations.

Kickoff

Place your weekly HW quiz on the desk and take the lesson paper!

Complete the try this!

Rational Equations

Try This: Solve for x

1)  ~~$\frac{3x-2}{2} = \frac{3}{3}$~~

$3(x+3) = 2x(2)$

$3x+9 = 4x$

$-3x \quad -3x$

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$9 = x$

2)  $\frac{x}{x+3} = \frac{8}{x+6}$

$8(x+3) = x(x+6)$

$8x+24 = x^2+6x$

$0 = x^2-2x-24$

$0 = (x-6)(x+4)$

$x = 6 \quad x = -4$

Fractional Equations-

- 1) Find the LCD. (both sides)
- 2) Multiply numerators by LCD.
- 3) Simplify!!
- 4) Solve!
- \*5) Check for extraneous roots!

Examples:

1)  $\frac{1}{x} + \frac{1}{6} = \frac{1}{2}$

~~$\frac{6x}{x} + \frac{6x}{6} = \frac{6x}{2}$~~

$6 + x = 3x$

$-x \quad -x$

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$6 = 2x$

$3 = x$

Check

$\frac{1}{x} + \frac{1}{6} = \frac{1}{2}$

$\frac{1}{3} + \frac{1}{6} = \frac{1}{2}$

$\frac{1}{2} = \frac{1}{2}$

2)  $\frac{x(x-1)}{x-1} = \frac{2}{x} + \frac{1(x-1)}{x-1}$

$1-1=0$

$x^2 = 2(x-1) + x$

$x^2 = 2x - 2 + x$

$x^2 = 3x - 2$

$-3x + 2 \quad -3x + 2$

$x^2 - 3x + 2 = 0$

$(x-2)(x-1) = 0$

$x = 2 \quad x = 1$

3)  $\frac{(x-2)(x+3)}{x-2} - \frac{8(x-2)(x+3)}{x+3} = \frac{10(x-2)(x+3)}{x^2+x-6}$

~~$(x-2)(x+3)$~~

$x(x+3) - 8(x-2) = 10$

$x^2 + 3x - 8x + 16 = 10$

$x^2 - 5x + 16 = 10$

$x^2 - 5x + 6 = 0$

$(x-3)(x-2) = 0$

$x = 3 \quad x = 2$

Solve each equation. Remember to check for extraneous solutions.

$$1) \frac{1}{5x^2} - \frac{x+5}{x^2} = \frac{1}{x}$$

$$2) \frac{3}{2} = \frac{b+5}{4b} + \frac{3}{2b}$$

$$3) \frac{1}{a+2} + \frac{6a+4}{a^2-3a-10} = \frac{1}{a-5}$$

$$4) \frac{1}{k-3} = \frac{3}{k-3} + \frac{2}{k+4}$$