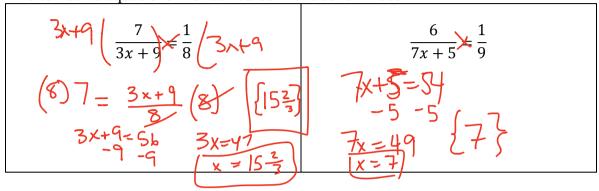
Mr. Rogove

Date:

LEARNING OBJECTIVE: We will solve equations with variable expressions in the denominator and rewrite equations as compound equations. (Lesson 93)

ACTIVATING PRIOR KNOWLEDGE:

We can solve equations with variables in the denominator.



CONCEPT DEVELOPMENT:

We should rewrite expressions as compound statements noting any values for the variables that are disallowed.

Examples:

 $\frac{5}{x+2}$ has a meaningful value for all values of x, except x=-2.

X+2 \$0

Why? Because $\frac{5}{0}$ would be dividing by zero, and we do not want to do that!

So, $\frac{5}{x+3}$ should be read as a compound statement:

$$\frac{5}{x+2} \text{ and } x+2 \neq 0$$

What is the value of $\frac{3x-6}{x-2}$? What values of x are disallowed? $\times \frac{1}{2}$

$$x \neq a$$

What are the values of x that are **not** permissible in this expression?

$$\frac{10}{x+5}$$

$$\frac{x^2-25}{(x^2-9)(x+4)}$$

$$(x-3)(x+3)$$

$$x^2-4,3,-3$$

GUIDED PRACTICE: Steps to Solving Equations with Variable Expressions in the Denominator

- 1. Rewrite the Equation as a System of Equations.
- 2. Solve the equation and exclude the values of x that lead a denominator of 0.
- 3. Express your solution in set notation.

| $\frac{1}{x} = \frac{3}{x-2} \times 1, \lambda$ $\frac{1}{x} \times \frac{3}{x-2} \text{and} x \neq 0, \lambda$ $3x = x-\lambda$ $-x - x$ $\frac{2x}{x} = -2$ $\frac{2x}{x} = -2$ $\frac{2x}{x} = -1$ | $\frac{2}{x} \times \frac{3}{x-4}$ $3x = 2(x-4) \text{ and } x + 4, 0$ $3x = 2x-8$ $-2x-2x$ $x = -8$ $x = -8$ |
|--|--|
| $\frac{x+3}{x-2} \times \frac{5}{x-2} \text{ and } x \neq 2$ $(x+3)(x-2) = 5(x-2)$ $(x+2)(x-2) - 5(x-2) = 0$ $(x-2)(x+3) - 5 = 0$ $(x-3)(x-2) = 0$ $(x-3)(x-2) = 0$ $(x-2)(x-2) = $ | $\frac{x}{x+6} = \frac{-\frac{6}{x+6}}{x+6} \times \frac{1}{x+6} = \frac{-\frac{6}{x+6}}{x+6} \times \frac{-\frac{1}{x+6}}{x+6} \times -\frac$ |
| $\frac{x}{7-x} \times \frac{2x}{1} \text{ and } x \neq 7$ $2x(7-x) = x$ $14x-2x^2 = x$ $\frac{-x}{13x-2x^2} = 0$ $x(13-2x) = 0$ $x = 0 \text{ or } 13-2x = 0$ | $\frac{3+x}{3-x} \times \frac{3+2x}{3-2x} \text{ and } x \neq 3, \frac{3}{3}$ $(3+x)(3-2x) = (3-x)(3+2x)$ $(3+x)(3-2x) = (3-x)(3+2x)$ $(3+x)(3-2x) = (3-x)(3+2x)$ $-3x = 3x$ $-3x = 3x$ $+3x + 3x$ $0 = 6x = x = x$ |

| Name: | Math 7.2, Period |
|---|--|
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| INDEPENDENT PRACTICE: | |
| Problem Set from Lesson 18? | |
| | |
| CLOSURE: Write an equation that will have the restrict | $x \neq -3, x \neq 14, \text{ and } x \neq 0.$ |

Notes:

This maps to Lesson 18 in Alg 1 Mod 1 of ENY.