

8.5 Day 1.....page #

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Goal: Solve rational equations.

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REVIEW!!

Find the least common multiple for each pair.

1.  $2x^2$  and  $4x^2 - 2x$       2.  $x + 5$  and  $x^2 - x - 30$

$2x(2x-1)$        $(x-6)(x+5)$

$2x^2(2x-1)$        $(x+5)(x-6)$

Add or subtract. Identify any x-values for which the expression is undefined.

3.  $\frac{4x}{4x} \cdot \frac{1}{x-2} + \frac{1}{4x} \cdot \frac{(x-2)}{(x-2)}$       4.  $\frac{1}{x^2} - \frac{1}{x}$

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

$\frac{5x-2}{4x(x-2)}$

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What is the LCM? ~~5a.~~ Solve the equation  $\frac{2}{x} + \frac{5}{5} = 4$

Multiply each term by the LCM

$2x + 15 = 24$   
 $-15 \quad -15$   
 $2x = 9$   
 $\frac{2x}{2} = \frac{9}{2}$   $x = 4.5$

5b. Solve the equation  $\frac{10}{3} = \frac{4}{x} + \frac{2}{1}$   $x \neq 0$

$10x = 12 + 6x$   
 $-6x \quad -6x$   
 $4x = 12$   
 $\frac{4x}{4} = \frac{12}{4}$   $x = 3$

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What is the LCM? 6. Solve the equation  $\frac{x^2 - 18}{x} = \frac{3}{1}$   $x \neq 0$

Multiply each term by the LCM

$x^2 - 18 = 3x$   
 $x^2 - 3x - 18 = 0$   
 $(x-6)(x+3) = 0$   
 $x = 6 \quad x = -3$

7. Solve the equation  $\frac{24}{3} = \frac{5x}{x} - \frac{7x}{x}$  **MATH IS AWESOME!!!**

$24 + 5x = -7x$   
 $-5x \quad -5x$   
 $24 = -12x$   
 $\frac{24}{-12} = \frac{-12x}{-12}$   
 $x = -2$

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An **extraneous solution** is a solution of an equation derived from an original equation that is not a solution of the original equation. When you solve a rational equation, it is possible to get extraneous solutions. These values should be eliminated from the solution set. Always check your solutions by substituting them into the original equation.

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Solve each equation.

8.  $\frac{5x}{x-2} = \frac{3x+4}{x-2}$   $x \neq 2$

Check your solution.

$5x(x-2) = (x-2)(3x+4)$   
 $5x^2 - 10x = 3x^2 - 2x - 8$   
 $-3x^2 + 2x + 8 - 3x^2 + 2x + 8$   
 $2x^2 - 8x + 8 = 0$   
 $2(x^2 - 4x + 4) = 0$   
 $2(x-2)(x-2) = 0$   
 $x = 2$  ext.  $\emptyset$

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What are the extraneous values?

9.  $\frac{2x-5}{x-8} + \frac{x}{2} = \frac{11}{x-8}$

$x \neq 8$

$4x-10 + x^2-8x = 22$

$x^2-4x-32=0$

$(x-8)(x+4)$

$x=8$  (ext)  
 $x=-4$

Check your solution.

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What are the extraneous values?

10. Solve the equation  $\frac{16}{x^2-16} = \frac{2}{x-4}$ .

Check your solution.

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**Assignment:** p.605 (2-10, 19-27)

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