Unit 1 (7.6) **Solving Rational Equations-Student Notes**

Solve.

1. $\frac{x}{5} - \frac{2}{5} = \frac{1}{5}$

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

Steps:

1. rewrite each fraction with a common denominator
2. add or subtract numerators
3. set numerators equal to each other
4. solve
5. check solutions

$$\frac{x}{2} + \frac{1}{3} = \frac{5}{6}$$

Examples:

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

2. $\frac{2x+1}{3} + \frac{x-5}{4} = \frac{9}{2}$

Now let's try some with variables. (Remember restrictions.)

3. $\frac{3}{x} = \frac{9}{x-2}$

4. $\frac{1}{x+2} + \frac{1}{x-2} = \frac{4}{x^2-4}$

What did you notice about the solution for #4?

Extraneous Solution

Solve the following. Remember to check for extraneous solutions.

1. $\frac{4}{3x}+\frac{5}{4}=\frac{3}{x}$

2. $\frac{7}{x+3}+\frac{5}{x-3}=\frac{10x-2}{x^2-9}$

3. $\frac{1}{x-6}+\frac{x}{x-2}=\frac{4}{x^2-8x+12}$

4. $\frac{x+5}{x^2+x}=\frac{1}{x^2+x}-\frac{x-6}{x+1}$