**Honors Math 3 Rationals REVIEW Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Simplify each of the following**

1. $\frac{x^{2}-1}{x^{2}+4x-5}$ 2. $\frac{2x^{2}-8x+8}{x-2}∙\frac{x}{x^{2}+5x+6}$

$\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_$ $\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_$

 3. $\frac{4x-24}{x^{2}-36}÷\frac{2x-4}{x^{2}+8x+12}$ 4. $\frac{2}{3x^{2}+12x}-\frac{8}{2x}$

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**Solve each of the following. Make sure to check for extraneous solutions.**

 5. $\frac{x+3}{x+1}=\frac{15}{x+7}$ 6. $\frac{1}{x-2}+\frac{1}{x^{2}-7x+10}=\frac{6}{x-2}$

$x=\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_$ $x=\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_$

 7. $\frac{1}{x-8}-1=\frac{7}{n-8}$

 $x=\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_$

**Solve each of the following. Show all work!!**

8. Mari and Liam can each wash a car and vacuum its interior in 2 hours. Zach needs 3 hours to do this same job alone. If Zach, Liam, and Mari work together, how long will it take them to clean a car?

9. Marco can build a lap top twice as fast as Cliff. Working together, it takes them 5 hours. How long would it have taken Marco working alone?

**For each of the following, find the Vertical Asymptote, Horizontal Asymptote, and Holes.**

 10. $y=\frac{x^{2}+2x}{x^{2}+3x+2}$ 11. $y=\frac{x-1}{x^{2}-1}$

 VA: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ VA: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 HA: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ HA: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 Hole: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Hole: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_