

NAME: _____

DATE: _____

Algebra 2: Homework 8-4

1. Fran can clean the garage in 3 hours, but it takes Angie 4 hours to do the same job. How long would it take them to clean the garage if they worked together?

2. Eric's truck drives 30 mph faster than Tim's motorcycle. In the same time it takes Tim to drive 75 miles, Eric can drive 120 miles. Find Tim and Eric's driving speed.

3. So far this baseball season, you have 12 hits out of 60 times at-bat. Find the number of consecutive hits you need to raise your batting average to 0.360.

4. 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?

5. Jon is kayaking a river which flows downstream at a rate of 1 mile per hour. He paddles 5 miles downstream and then turns around and paddles 6 miles upstream. The trip takes 3 hours. How fast can Jon paddle in still water?

6. Solve the following equation. Remember to check for extraneous solutions.

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

7. Solve the following equations, and check for extraneous solutions

$$\frac{m+5}{m^2+m} = \frac{1}{m^2+m} - \frac{m-6}{m+1}$$

8. Perform the indicated operations for each problem below and express in simplest form.

a. $\frac{7m}{m-3} + \frac{5m}{3-m}$

b. $\frac{b^2}{b^2-2bc+c^2} - \frac{b}{b-c}$

c. $\frac{a^2+6a+9}{a^2-9} \cdot \frac{3a-9}{a+3}$

d. $\frac{d+c}{c^2+d^2} \div \frac{c^2-d^2}{d^2-dc}$

e. $\left(\frac{x-2}{x^2+1}\right)^{-3} \div \left(\frac{x^2-4x+4}{x^2-2x-3}\right)$

9. Simplify the following rational expression: $\frac{(x^2y)^2(xy)^3z^2}{(xy^2)^2yz}$.

10. Reduce the following rational expressions to lowest terms, and identify the values of the variable(s) that must be excluded to prevent division by zero.

a. $\frac{2(x+1)+2}{(2x+3)(x+1)-1}$

b. $\frac{x^2-x-6}{5x^2+10x}$