

## 4-5 Rational Equations

Date \_\_\_\_\_ Period \_\_\_\_\_

**Solve each equation. Remember to check for extraneous solutions.**

1)  $\frac{1}{x^2} - \frac{1}{x} = \frac{3}{x^2}$

 $\{-2\}$ 

2)  $\frac{4}{r} = \frac{3}{2r^2} - \frac{2}{r}$

 $\left\{\frac{1}{4}\right\}$ 

3)  $\frac{1}{x+3} + \frac{x+5}{x^2+3x} = \frac{x-5}{x^2+3x}$

 $\{-10\}$ 

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

 $\{11\}$ 

5)  $\frac{2x-4}{x^2-3x-10} - \frac{6}{x^2-3x-10} = \frac{x+1}{x+2}$

 $\{1\}$ 

6)  $\frac{n-4}{n^2+5n} + \frac{n+2}{n^2+5n} = 1$

 $\{-2, -1\}$ 

7)  $\frac{2x+10}{3x} + \frac{x+1}{3x^2} = \frac{1}{3x^2}$

 $\left\{-\frac{11}{2}\right\}$ 

8)  $\frac{1}{3} = \frac{2}{n^2-4n} + \frac{1}{n}$

 $\{6, 1\}$ 

- 9) A loaded moving truck is traveling 20 mph faster than a freight train. In the time it takes the train to travel 160 miles, the truck travels 240 miles. Find the speed of the truck.

 $60 \text{ mph}$ 

- 10) The average cost per unit  $C(x)$  to produce  $x$  units of plywood is given by

$$C(x) = \frac{300}{x} + 10,$$

- a) What is the cost per unit when 590 units are produced?

- b) If the cost per unit is \$1.50, how many units have been produced?

 $a) \$0.50 \quad b) 190$ **Review: Simplify each and state the excluded values.**

11)  $\frac{x^2-16}{x^2+7x+12}$

 $\frac{x-4}{x+3}; \{-4, -3\}$ 

12)  $\frac{-b^2+12b-20}{b-2} \div \frac{b^2-3b-70}{3b-6}$

 $-\frac{3(b-2)}{b+7}$