

*Chapter 6:*

1. Simplify each expression completely by dividing out common factors.

a)  $\frac{x^2 + 4x}{5x + 20}$

b)  $\frac{2x - x^2}{2x - 4}$

c)  $\frac{x - 5}{x^2 - 25}$

2. Divide using long division.

a)  $(2y^2 + 7y - 30) \div (y + 6)$

b)  $\frac{y^3 - 4y^2 + 3}{y - 2}$

3. Multiply or divide, as indicated. Simplify completely.

a)  $\frac{4x - 12}{8x^2} \cdot \frac{2x}{x^2 - 9}$

b)  $\frac{x^2 - 6x}{2x^2} \div \frac{x^2 - 4x - 12}{x^2 - 4}$

4. Add or subtract, as indicated. Simplify the result, if possible.

a)  $\frac{2x - 2}{x^2 + 4x} + \frac{x + 14}{x^2 + 4x}$

b)  $\frac{x^2 + 3x}{x^2 - 1} - \frac{6 - 2x}{x^2 - 1}$

5. Add or subtract (as indicated) by first finding the least common denominator and building up each fraction appropriately. Simplify the result, if possible.

a)  $\frac{x + 9}{2x + 6} + \frac{x + 12}{x^2 + 3x}$

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

**Chapter 7:**

6. For each expression, identify the restriction on  $x$  (so that the fraction is not undefined).

a)  $\frac{1 - 4x}{2x + 9}$

b)  $\frac{5x + 4}{x^2 + 4x - 12}$

7. Solve each quadratic equation using factoring.

a)  $-3x^2 + 15x = 0$

b)  $5x^2 + 7x - 6 = 0$

c)  $x^2 + 13x = -36$

d)  $(x + 6)(x - 2) = 20$

8. Solve each equation by first identifying the LCD and then clearing the fractions.

a)  $1 = \frac{24}{x^2} + \frac{10}{x}$

b)  $\frac{x}{x+5} = x + \frac{3}{x+5}$

c)  $\frac{1}{x} = 1 - \frac{15}{x^2 - 3x}$