

### Worksheet 3

Add or subtract these rational expressions. Simplify the results.

*Example:* 
$$\begin{aligned} \frac{x+2}{x-1} + \frac{x}{x+1} &= \frac{(x+2)(x+1)}{(x-1)(x+1)} + \frac{x(x-1)}{(x+1)(x-1)} \\ &= \frac{x^2+3x+2}{(x-1)(x+1)} + \frac{x^2-x}{(x+1)(x-1)} \\ &= \frac{2x^2+2x+2}{(x-1)(x+1)} \end{aligned}$$

1.  $\frac{m+2}{3m} + \frac{2m+1}{3m} =$

2.  $\frac{a}{b} + \frac{b}{a} =$

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

4.  $\frac{2}{x-2} - \frac{x}{x-2} =$

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

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

7.  $\frac{2}{x+1} + \frac{1}{x+2} =$

8.  $\frac{x+2}{x^2+4x+3} + \frac{3}{x+3} =$

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

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

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

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

## Worksheet 1

What is the least common denominator you would use to multiply each term in these rational equations to find a solution?

*Example:*  $\frac{1}{3} + \frac{1}{x} = \frac{1}{2}$  LCD for 3,  $x$ , and 2 is  $6x$

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

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

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

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

Solve the following rational equations.

*Example:*

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

$$\frac{1}{\cancel{3}^1} \cdot \frac{2x}{2x} + \frac{1}{\cancel{x}^1} \cdot \frac{6}{6} = \frac{1}{\cancel{2}^1} \cdot \frac{3x}{3x}$$

$$2x + 6 = 3x$$

$$6 = x \text{ or } x = 6$$

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

6.  $\frac{5}{3y} + \frac{4}{2y} = \frac{1}{6}$

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

8.  $\frac{x}{2} + \frac{1}{4} = \frac{4x}{5}$

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

10.  $\frac{x-2}{x} = \frac{x-2}{x-4}$

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

12.  $\frac{3x}{x-2} - \frac{4}{x-1} = 3$

# 11-5

## Worksheet 2

### Worksheet 2

Solve each equation:

1.  $\frac{1}{2} + \frac{2}{x} = \frac{1}{x}$

2.  $\frac{y}{5} = \frac{3}{y+2}$

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

4.  $\frac{3}{x+3} = \frac{2}{2(x+2)}$

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

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

7.  $\frac{x}{x+2} + \frac{5}{x+1} = \frac{1}{x^2+3x+2}$

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

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

10. Solve and check your results:  $\frac{x}{x+2} + \frac{4}{x+3} = \frac{2}{x^2+5x+6}$