

# College Algebra Section 1-1

Example 1:  $\frac{1}{2}(x + 5) - 4 = \frac{1}{3}(2x - 1)$  Multiply all terms by 6

$$6\left[\frac{1}{2}(x + 5)\right] - 6(4) = 6\left[\frac{1}{3}(2x - 1)\right]$$

$$3(x + 5) - 24 = 2(2x - 1)$$

$$3x + 15 - 24 = 4x - 2$$

$$-x = 7 \text{ then } x = -7$$

Example 2:  $(2y + 1)(y - 1) = (y + 5)(2y - 5)$  FOIL BOTH SIDES

$$2y^2 - y - 1 = 2y^2 + 5y - 25$$

$$-6y = -24$$

$$y = 4$$

Example 3:  $\frac{3}{x-2} = \frac{1}{x-1} + \frac{7}{(x-1)(x-2)}$  Multiply all by  $(x-2)(x-1)$

$$3(x - 1) = 1(x - 2) + 7$$

$$3x - 3 = x + 5$$

$$2x = 8 \text{ then } x = 4$$

*Make sure  $x = 4$  does not make any denominators zero*

Example 4: Shane grossed \$435 one week b working 52 hours. Her employer pas time-and-a-half for all hours worked in excess of 40 hours. With this information, can you determine Shane's regular hourly wage?

x will represent hourly wage  
she worked 12 hours overtime

The sum of regular salary plus overtime salary will equal \$435

$$40x + 12(1.5x) = 435$$

$$40x + 18x = 435$$

$$58x = 435 \quad x = 7.5 \text{ therefore hourly wage is } \$7.50$$