

Homework 17.1

© 2014 Kuta Software LLC. All rights reserved.

Solve each system by substitution.

$$1) \begin{array}{l} 3x - 6y = 18 \\ y = x - 6 \end{array}$$

$$\begin{aligned} 3x - 6(x-6) &= 18 \\ 3x - 6x + 36 &= 18 \\ -3x + 36 &= 18 \\ \hline -3x &= -18 \end{aligned}$$

$$\begin{array}{r} -3x = -18 \\ \hline -3 \\ x = 6 \end{array}$$

$$\begin{aligned} y &= 6 - 6 \\ &= 0 \end{aligned}$$

$$\boxed{(6, 0)}$$

$$3) \begin{array}{l} 3x + 6y = -9 \\ y = x \end{array}$$

$$\begin{aligned} 3x + 6(x) &= -9 \\ 9x &= -9 \\ \hline x &= -1 \end{aligned}$$

$$\begin{aligned} y &= x \\ &= -1 \end{aligned}$$

$$\boxed{(-1, -1)}$$

$$5) \begin{array}{l} 7x - 2y = 2 \\ y = 3x \end{array}$$

$$\begin{aligned} 7x - 2(3x) &= 2 \\ 7x - 6x &= 2 \\ x &= 2 \end{aligned}$$

$$\begin{aligned} y &= 3x \\ &= 3(2) \\ &= 6 \end{aligned}$$

$$\boxed{(2, 6)}$$

$$2) \begin{array}{l} -4x + 6y = 0 \\ y = 7x \end{array}$$

$$\begin{aligned} -4x + 6(7x) &= 0 \\ -4x + 42x &= 0 \end{aligned}$$

$$\begin{array}{r} 38x = 0 \\ \hline 38 \\ x = 0 \end{array}$$

$$y = 7(0)$$

$$\begin{array}{r} y = 0 \\ \boxed{(0, 0)} \end{array}$$

$$4) \begin{array}{l} 2x + 2y = 14 \\ y = 3x + 7 \end{array}$$

$$\begin{aligned} 2x + 2(3x + 7) &= 14 \\ 2x + 6x + 14 &= 14 \end{aligned}$$

$$\begin{array}{r} 8x + 14 = 14 \\ -14 -14 \hline 8x = 0 \end{array}$$

$$2(0) + 2y = 14$$

$$\frac{2y}{2} = \frac{14}{2}$$

$$y = 7$$

$$\boxed{(0, 7)}$$

$$\begin{array}{r} 8x = 0 \\ \hline 8 \\ x = 0 \end{array}$$

$$6) \begin{array}{l} y = 3x + 2 \\ 2x + 5y = 10 \end{array}$$

$$\begin{aligned} 2x + 5(3x + 2) &= 10 \\ 2x + 15x + 10 &= 10 \end{aligned}$$

$$\begin{array}{r} 17x + 10 = 10 \\ -10 -10 \hline 17x = 0 \end{array}$$

$$y = 3(0) + 2$$

$$y = 2$$

$$\boxed{(0, 2)}$$

$$\begin{array}{r} 17x = 0 \\ \hline 17 \\ x = 0 \end{array}$$

$$x = 0$$

Write the slope-intercept form of the equation of the line through the given points.

$$7) \text{ through: } (3, 1) \text{ and } (5, -1)$$

$$8) \text{ through: } (-2, 1) \text{ and } (5, -3)$$

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

$$y - 1 = -1(x - 3)$$

$$\begin{array}{r} y - 1 = -x + 3 \\ +1 +1 \hline y = -x + 4 \end{array}$$

$$m = \frac{1 + 3}{-2 - 5} = \frac{4}{-7}$$

$$\frac{7y}{7} = \frac{-4x - 1}{7}$$

$$7(y - 1) = \frac{-4}{7}(x + 2) \quad (7) \quad y = \frac{-4}{7}x - \frac{1}{7}$$

$$\begin{array}{r} 7y - 7 = -4x - 8 \\ +7 +7 \hline 7y = -4x - 1 \end{array}$$

Answers to Homework 17.1

1) $(6, 0)$

5) $(2, 6)$

2) $(0, 0)$

6) $(0, 2)$

3) $(-1, -1)$

7) $y = -x + 4$

4) $(0, 7)$

8) $y = -\frac{4}{7}x - \frac{1}{7}$