

Homework 17.2

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Solve each system by substitution.

$$\begin{aligned} 1) \quad & 3x - 3y = 15 \\ & y = 5x - 1 \end{aligned}$$

$$\begin{aligned} -12x &= 12 \\ -12 & \quad -12 \\ & \boxed{(1, -6)} \end{aligned}$$

$$\begin{aligned} 3x - 3(5x - 1) &= 15 \\ 3x - 15x + 3 &= 15 \\ -12x + 3 &= 15 \\ -3 & \quad -3 \\ & \boxed{y = -6} \end{aligned}$$

$$\begin{aligned} 3) \quad & y = x - 8 \\ & 4x + 5y = -13 \end{aligned}$$

$$\begin{aligned} 4x + 5(x - 8) &= -13 \\ 4x + 5x - 40 &= -13 \\ 9x - 40 &= -13 \\ +40 & \quad +40 \\ \hline 9x &= 27 \\ 9 & \quad 9 \\ x &= 3 \end{aligned}$$

$$\begin{aligned} 5) \quad & -3x - 5y = 24 \\ & y = -3x \end{aligned}$$

$$\begin{aligned} -3x - 5(-3x) &= 24 \\ -3x + 15x &= 24 \\ 12x &= 24 \\ 12 & \quad 12 \\ x &= 2 \end{aligned}$$

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

$$\begin{aligned} 2) \quad & y = 7x \\ & -4x + 5y = 0 \end{aligned}$$

$$\begin{aligned} -4x + 5(7x) &= 0 \\ -4x + 35x &= 0 \\ 31x &= 0 \\ 31 & \quad 31 \\ x &= 0 \end{aligned}$$

$$\begin{aligned} y &= 7(0) \\ y &= 0 \\ \boxed{(0, 0)} \end{aligned}$$

$$\begin{aligned} 4) \quad & 6x - y = -15 \\ & y = x \end{aligned}$$

$$\begin{aligned} 6x - (x) &= -15 \\ 5x &= -15 \\ 5 & \quad 5 \\ x &= -3 \end{aligned}$$

$$\begin{aligned} y &= x \\ y &= -3 \\ \boxed{(-3, -3)} \end{aligned}$$

$$\begin{aligned} 6) \quad & y = -4x - 7 \\ & 2x - 4y = 10 \end{aligned}$$

$$\begin{aligned} 2x - 4(-4x - 7) &= 10 \\ 2x + 16x + 28 &= 10 \\ 18x + 28 &= 10 \\ -28 & \quad -28 \\ \hline 18x &= -18 \\ 18 & \quad 18 \\ x &= -1 \end{aligned}$$

$$\begin{aligned} y &= -4(-1) - 7 \\ y &= 4 - 7 \\ y &= -3 \\ \boxed{(-1, -3)} \end{aligned}$$

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

7) through: $(-5, -4)$ and $(0, 0)$

$$m = \frac{-4 - 0}{-5 - 0} = \frac{+4}{+5}$$

$$s(y + 4) = \frac{4}{5}(x + 5) \quad (5)$$

$$\begin{aligned} 5y + 20 &= 4x + 20 \\ -20 & \quad -20 \\ \hline 5y &= 4x \end{aligned}$$

8) through: $(3, -2)$ and $(-5, 0)$

$$m = \frac{-2 - 0}{3 + 5} = \frac{-2}{8} = \frac{-1}{4}$$

$$(4)(y + 2) = \frac{-1}{4}(x - 3) \quad (4)$$

$$y = \frac{4}{5}x + 0$$

$$\begin{aligned} 4y + 8 &= -x + 3 \\ -8 & \quad -8 \\ \hline 4y &= -x - 5 \\ 4 & \quad 4 \\ y &= -\frac{1}{4}x - \frac{5}{4} \end{aligned}$$

Answers to Homework 17.2

1) $(-1, -6)$

5) $(2, -6)$

2) $(0, 0)$

6) $(-1, -3)$

3) $(3, -5)$

7) $y = \frac{4}{5}x$

4) $(-3, -3)$

8) $y = -\frac{1}{4}x - \frac{5}{4}$