

## Homework 16.3

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Solve each system by elimination.

$$\begin{aligned} 1) \quad -6x - 3y &= -21 \quad (1) \\ -3x + 3y &= -6 \quad (2) \end{aligned}$$

$$\begin{array}{r} -9x = -27 \\ \hline -9 \end{array}$$

$$x = 3$$

$$(3, 1)$$

$$\begin{aligned} -6(3) - 3y &= -21 \\ -18 - 3y &= -21 \end{aligned}$$

$$\begin{array}{r} +18 \\ \hline -3y = -3 \end{array}$$

$$\begin{array}{r} -3y = -3 \\ \hline -3 \end{array}$$

$$y = 1$$

$$3) \quad -4x - 6y = 26 \quad (1)$$

$$\begin{array}{r} 6x + 2y = 10 \quad (2) \cdot (3) \\ \hline -4x - 6y = 26 \quad (1) \\ 18x + 6y = 30 \quad (2) \end{array}$$

$$\begin{array}{r} 14x = 56 \\ \hline 14 \end{array}$$

$$x = 4$$

$$(4, -7)$$

$$\begin{aligned} (2) \quad 6(4) + 2y &= 10 \\ 24 + 2y &= 10 \end{aligned}$$

$$\begin{array}{r} -24 \\ \hline 2y = -14 \end{array}$$

$$\begin{array}{r} 2y = -14 \\ \hline 2 \end{array}$$

$$y = -7$$

$$5) \quad -2x = -8 - \frac{5}{3}y \quad (1)$$

$$\begin{array}{r} -27 - 3x = -9y \quad (2) \\ \hline \end{array}$$

$$\begin{array}{r} -2x = -8 - \frac{5}{3}y \quad (1) \cdot (3) \\ \hline \end{array}$$

$$\begin{array}{r} -6x = -24 - 5y \\ +5y \quad +5y \end{array}$$

$$\begin{array}{r} -6x + 5y = -24 \quad (1) \\ -27 - 3x = -9y \quad (2) \end{array}$$

$$\begin{array}{r} +9y \quad +9y \\ \hline -27 - 3x + 9y = 0 \end{array}$$

$$\begin{array}{r} +27 \quad +27 \\ \hline -3x + 9y = 27 \quad (2) \end{array}$$

$$\begin{aligned} -6x + 5y &= -24 \quad (1) \\ -3x + 9y &= 27 \quad (2) \cdot (-2) \end{aligned}$$

$$\begin{array}{r} -6x + 5y = -24 \\ 6x - 18y = -54 \end{array}$$

$$\begin{array}{r} -6x + 5y = -24 \\ 6x - 18y = -54 \\ \hline -13y = -78 \end{array}$$

$$\begin{array}{r} -13y = -78 \\ \hline -13 \end{array}$$

$$y = 6$$

$$(2) \quad -3x + 9(6) = 27$$

$$\begin{array}{r} -3x + 54 = 27 \\ -54 - 54 \end{array}$$

$$\begin{array}{r} -3x = -27 \\ \hline -3 \end{array}$$

$$x = 9$$

$$(9, 6)$$

Find the slope of the line through each pair of points.

$$7) \quad (10, 12), (9, 4)$$

$$m = \frac{12 - 4}{10 - 9} = \frac{8}{1}$$

$$2) \quad \begin{aligned} -8x + 9y &= 14 \quad (1) \\ 8x - 6y &= -20 \quad (2) \end{aligned}$$

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

$$y = -2$$

$$(4, -2)$$

$$\begin{array}{r} 8x - 6(-2) = -20 \\ 8x + 12 = -20 \end{array}$$

$$\begin{array}{r} +12 \\ \hline -12 \end{array}$$

$$\begin{array}{r} 8x = -32 \\ \hline 8 \end{array}$$

$$x = -4$$

$$4) \quad 8x + 7y = 21 \quad (1) \cdot (10)$$

$$\begin{array}{r} 7x + 10y = 30 \quad (2) \cdot (-7) \\ \hline \end{array}$$

$$\begin{array}{r} 80x + 70y = 210 \\ -49x - 70y = -210 \end{array}$$

$$\begin{array}{r} 31x = 0 \\ \hline 31 \end{array}$$

$$x = 0$$

$$(0, 3)$$

$$8(0) + 7y = 21$$

$$\begin{array}{r} 7y = 21 \\ \hline 7 \end{array}$$

$$y = 3$$

$$6) \quad x - \frac{9}{14}y - \frac{15}{14} = 0 \quad (1) \cdot (14)$$

$$\begin{array}{r} 9 = -18y + 21x \quad (2) \\ \hline \end{array}$$

$$\begin{array}{r} 14x - 9y - 15 = 0 \\ +15 + 15 \end{array}$$

$$14x - 9y = 15 \quad (1)$$

$$9 = -18y + 21x \quad (2)$$

$$\begin{array}{r} -21x \quad -21x \\ +18y \quad +18y \end{array}$$

$$\begin{array}{r} -21x + 18y + 9 = 0 \\ -9 - 9 \end{array}$$

$$-21x + 18y = -9 \quad (2)$$

$$\begin{array}{r} 14x - 9y = 15 \quad (1) \cdot (2) \\ +21x \quad +21x \end{array}$$

$$-21x + 18y = -9 \quad (2)$$

$$28x - 18y = 30 \quad (1)$$

$$\begin{array}{r} 7x = 21 \\ \hline 7 \end{array}$$

$$x = 3$$

$$(1) \quad 14(3) - 9y = 15$$

$$\begin{array}{r} 42 - 9y = 15 \\ -42 - 42 \end{array}$$

$$\begin{array}{r} -9y = -27 \\ \hline -9 - 9 \end{array}$$

$$(3, 3)$$

$$y = 3$$

$$8) \quad (-18, -8), (18, -11)$$

$$m = \frac{-8 + 11}{-18 - 18} = \frac{3}{-36} = -\frac{1}{12}$$

### Answers to Homework 16.3

1)  $(3, 1)$   
5)  $(9, 6)$

2)  $(-4, -2)$   
6)  $(3, 3)$

3)  $(4, -7)$   
7) 8

4)  $(0, 3)$   
8)  $-\frac{1}{12}$