

Use point-slope form of a linear equation to write an equation for the line containing each pair of points.

a. $(5, -2), (7, 4)$ $y - y_1 = m(x - x_1)$

$$m = \frac{4 - (-2)}{7 - 5} = \frac{6}{2} = 3 = m$$

$$y - 4 = 3(x - 7)$$

$$y - (-2) = 3(x - 5)$$

$$y + 2 = 3(x - 5) \text{ distribute}$$

$$\begin{array}{r} y + 2 = 3x - 15 \\ \text{Add/sub} \\ \hline y + 2 = 3x - 15 \\ -2 \qquad -2 \end{array}$$

$$\boxed{y = 3x - 17}$$

$$(5, -2) (7, 4)$$

$$y - 4 = 3(x - 7)$$

$$\begin{array}{r} y - 4 = 3x - 21 \\ + 4 \qquad + 4 \end{array}$$

$$\boxed{y = 3x - 17}$$

$$b. (1, 5), (-2, 11)$$

$$m = \frac{11-5}{-2-1} = \frac{6}{-3} = -2$$

$$y - 5 = -2(x - 1)$$

$$\begin{array}{r} y - 5 = -2x + 2 \\ 0 + 5 \qquad \qquad + 5 \end{array}$$

$$y = -2x + 7$$

Sec. 5.4 Parallel and Perpendicular Lines

Find the slope of each line.

a. $y = \frac{1}{4}x + 7$ $m = \frac{1}{4}$

b. $y = -10x - 3$ $m = -10$

c. $3x + 4y = 5$
 $\begin{array}{r} -3x \\ \hline \end{array}$ $\begin{array}{r} -3x \\ \hline \end{array}$

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

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

$$m = -\frac{3}{4}$$

Standard Form
 $Ax + By = C$
 $m = -\frac{A}{B}$

$$d. \quad \underline{2x} + 5y = 7$$

$$m = \frac{-A}{B} = \frac{-2}{5}$$

$$e. \quad -7x + 4y = 11 \quad \frac{-(-7)}{4}$$

$$m = \frac{-A}{B} = \frac{7}{4}$$

$$f. \quad -3x - 6y = 5$$

$$m = \frac{-A}{B} = \frac{3}{-6} = -\frac{1}{2}$$

$$g. \quad 15 = 22x - \frac{1}{2}y$$

$$22x - \frac{1}{2}y = 15$$

$$m = \frac{-A}{B} = \frac{-22}{-\frac{1}{2}} = +\frac{22}{1} \cdot \frac{2}{1} = 44$$

p. 256 (39-41)
p. 261 (16-27)

$m \rightarrow \text{same}$

$m \rightarrow \text{opposite reciprocal}$