

EXAMPLE 1

▶ WHAT IS THE SLOPE
OF THE LINE PASSING
THROUGH THE POINTS
▶ R(-2,6) AND S(5,-1)?

x/y
R(-2,6)
S(5,-1)

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

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

$$m = \frac{-7}{7}$$

$$m = -1$$

EXAMPLE 2

► If the slope of the line containing the points

$$\begin{array}{l} x \ y \\ (-4, 4) \\ (a, 10) \end{array}$$

► $(-4, 4)$ and $(a, 10)$ is $\frac{1}{2}$,

find the value of a .

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

$$b = \frac{10 - 4}{a - -4}$$

$$b = \frac{b}{(a+4)}$$

$$b(a+4) = b$$

$$ba + 24 = b - 24 - 24$$

$$ba = -18$$

$$a = -3$$

EXAMPLE 3

► Write an equation of a line that passes through the point $(4, -3)$ and whose slope is 2. $m = 2$

$$y - y_1 = m(x - x_1)$$

$$y - -3 = 2(x - 4)$$

$$y + 3 = 2(x - 4)$$

EXAMPLE 4

► Write an equation of a line that passes

through the points

$(3, -6)$ and $(6, 12)$. $m = 6$ ($6, 12$)

$$\begin{array}{c|c} x & y \\ \hline (3, -6) \\ (6, 12) \end{array}$$

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

$$m = \frac{12 - (-6)}{6 - 3}$$

$$m = \frac{18}{3} = 6$$

$$y - y_1 = m(x - x_1)$$

$$y - 12 = 6(x - 6)$$

$$\text{or } m = 6 \quad (3, -6)$$

$$y - y_1 = m(x - x_1)$$

$$y - (-6) = 6(x - 3)$$

$$y + 6 = 6(x - 3)$$

3 possible answers

EXAMPLE 5

► Write an equation of a line that is **parallel** to the line

- ① $y = mx + b$ form
- ② Find slope
- ③ Find m or b
- ④ $y - y_1 = m(x - x_1)$

► $2y = 5x - 4$ and passes through the point $(4, 5)$.

$$\frac{2y}{2} = \frac{5x - 4}{2}$$

$$y = \frac{5}{2}x - 2$$

$$m = \frac{5}{2}$$

$$// m = \frac{5}{2}$$

$$(4, 5)$$

$$y - y_1 = m(x - x_1)$$

$$y - 5 = \frac{5}{2}(x - 4)$$

EXAMPLE 6

► Write an equation of a line that is

perpendicular to the

line $2y - 3x - 4 = 0$ and passes through the point $(4, 5)$.

$$2y = \frac{3}{2}x - 4$$

$$y = \frac{3}{4}x - 2$$

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

$$\perp m = -\frac{4}{3} \quad (4, 5)$$

$$y - y_1 = m(x - x_1)$$

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