

CHAPTER 5

WRITING LINEAR EQUATIONS

Section 5.1 Writing Linear Equations in Slope-Intercept Form

Slope-Intercept Form

$$y = mx + b$$

$m = \text{slope}$
 $b = \text{y-intercept}$

EXAMPLES

1. Write an equation of the line whose slope is 5 and whose y-intercept is -4.

$$m = 5$$

$$b = -4$$

$$y = 5x + (-4)$$

$$y = 5x - 4$$

$$y = mx + b$$

2. Write an equation of the line whose slope is $-\frac{1}{4}$ and whose y-intercept is 0.

$$m = -\frac{1}{4} \quad b = 0$$

$$y = -\frac{1}{4}x + 0$$

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

3. Write an equation of the lines shown in the graphs.

a. $m = -\frac{1}{2}$ $b = 3$

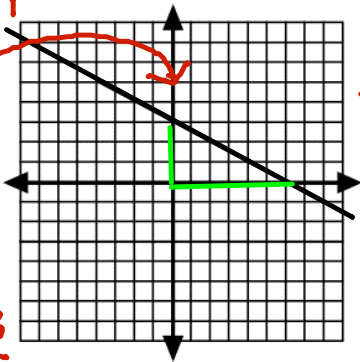
b. $m = 3$ $b = -2$

EQ = $y = -\frac{1}{2}x + 3$

EQ = $y = 3x - 2$

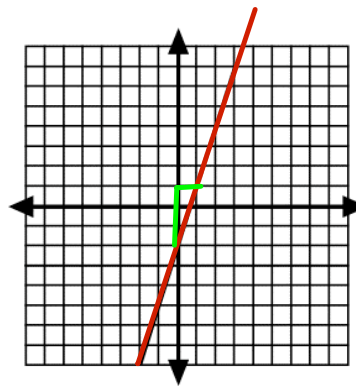
$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

$(0, 3)$
 $(6, 0)$



$$-\frac{3}{6} = -\frac{1}{2}$$

$$\frac{0 - 3}{6 - 0} = -\frac{3}{6}$$



$$m = \frac{3}{1} = 3$$

$(0, -2)$
 $(1, 1)$

$$\frac{-2 - 1}{0 - 1} = \frac{-3}{-1}$$

$$b = 30$$

$$m = .25$$

4. A rental company charges a flat fee of \$30 and an additional \$0.25 per mile to rent a moving van.

- a. Write an equation to model the total cost, y , (in dollars) in terms of x , the number of miles driven.

$$y = .25x + 30$$

- b. Use the equation from part "a" to complete the following table.

Miles (x)	Cost (y)
25	\$36.25
50	42.50
100	55.00

$$y = .25(25) + 30$$
$$y = .25(50) + 30$$
$$y = .25(100) + 30$$