CHAPTER 3 REVIEW

1. If $k(x) = -\dfrac{2}{3}x - 5$, then find $k(7)$.

    x-value

$$k(7) = -\tfrac{2}{3}(7) - 5$$

$$k(7) = -\tfrac{14}{3} - 5$$

$$k(7) = -\tfrac{14}{3} - \tfrac{15}{3}$$

$$k(7) = -\tfrac{29}{3}$$

2. If $m(x) = 8x - 15$, then find $m(-3)$.

    x-value

$$m(-3) = 8(-3) - 15$$

$$m(-3) = -24 - 15$$

$$m(-3) = -39$$

3. If $g(x) = \dfrac{3}{2}x - 9$, find x when $g(x) = 15$.

y-value ↓ (over the 15)

$$15 = \frac{3}{2}x - 9$$
$$+9 \qquad +9$$
$$\frac{2}{3} \cdot 24 = \frac{3}{2}x \cdot \frac{2}{3}$$
$$16 = x$$

4. A small town in SC had a population of 6328 in 2000. By 2008, the population had increased to 9256.

a) If $p(x) = 366x + 6328$ can be used to find the number of people living in this town and x represents the number of years since 2000, find $p(22)$ and explain what this means.

x-value ← # of years since 2000

$$p(22) = 366(22) + 6328$$
$$p(22) = 8052 + 6328$$
$$p(22) = 14{,}380$$

In 2022, the population of this town was 14,380.

b) If $p(x) = 12{,}550$, find x and explain what this means.

↑ y-value

$$12{,}550 = 366x + 6328$$
$$-6328 \qquad\qquad -6328$$
$$\frac{6{,}222}{366} = \frac{366x}{366}$$
$$17 = x$$

$$p(17) = 12{,}550$$

In 2017, the population was 12,550.

5. Find the *x-intercept and y-intercept* of each equation below. **SHOW ALL WORK.**

a) $5x + 10y = -30$

x-intercept = ___-6___

y-intercept = ___-3___

x-int

$5x + 10(0) = -30$

$\dfrac{5x}{5} = \dfrac{-30}{5}$

$x = -6$

y-int

$5(0) + 10y = -30$

$\dfrac{10y}{10} = \dfrac{-30}{10}$

$y = -3$

b) $4x - 9y = 18$

x-intercept = ___$\dfrac{9}{2}$ or 4.5___

y-intercept = ___-2___

x-int

$4x - 9(0) = 18$

$\dfrac{4x}{4} = \dfrac{18}{4}$

$x = \dfrac{9}{2}$ or 4.5
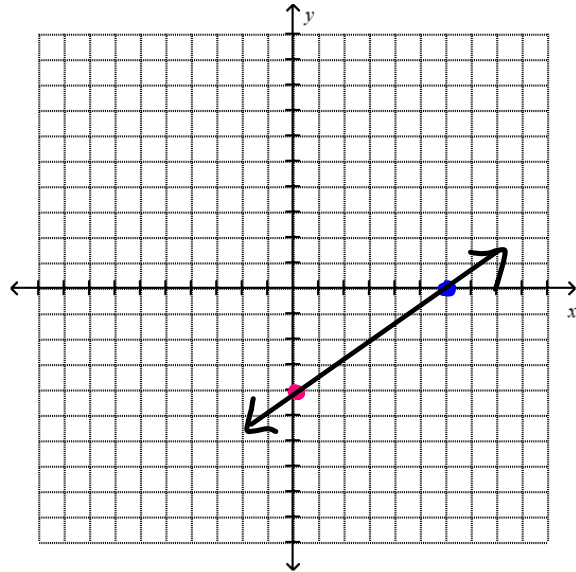
y-int

$4(0) - 9y = 18$

$\dfrac{-9y}{-9} = \dfrac{18}{-9}$

$y = -2$

6. Graph the equation below by finding the _x-intercept and y-intercept_. **Show your work below the graph.**

$-8x + 12y = -48$

x-int = 6

y-int = -4

$y = mx + b$

7. a) Rewrite the equation $4x - 3y = 12$ in _slope-intercept form._

Solve for y

$$4x - 3y = 12$$
$$-4x \qquad -4x$$
$$-3y = -4x + 12$$
$$-3 \qquad -3 \qquad -3$$
$$\boxed{y = \frac{4}{3}x - 4}$$

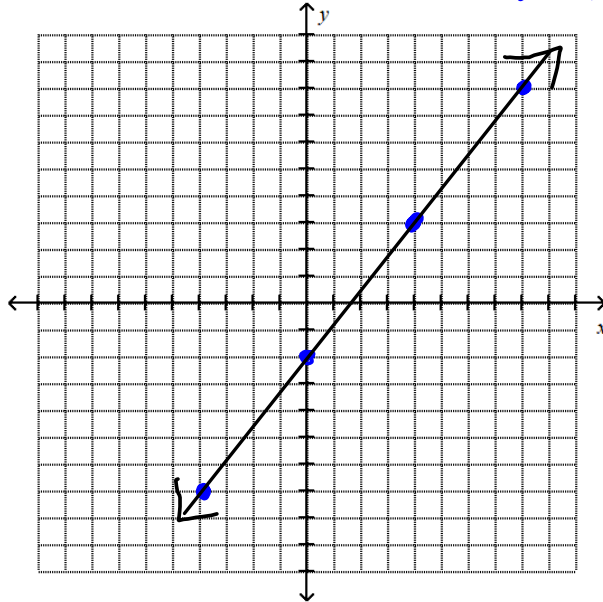b) What is the _slope_? $\frac{4}{3}$

c) What is the _y-intercept_? -4

$$y = mx + b$$

8. Graph the equation below from *slope-intercept form*.

$$y = \frac{5}{4}x - 2$$ $m = \frac{5 \text{ up}}{4 \text{ right}}$ $y\text{-int} = -2$
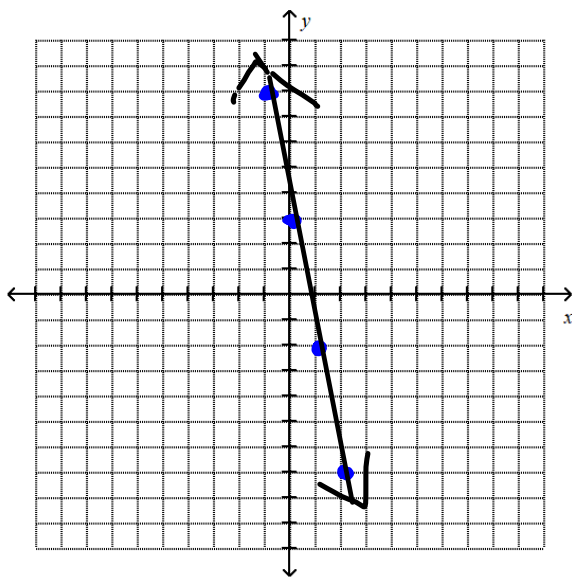   ↑
                                          starting point

9. Graph the equation below by converting to *slope-intercept form*. **Show your work below the graph.**

$$-10x - 2y = -6$$
$$\underline{+10x \qquad\qquad +10x}$$
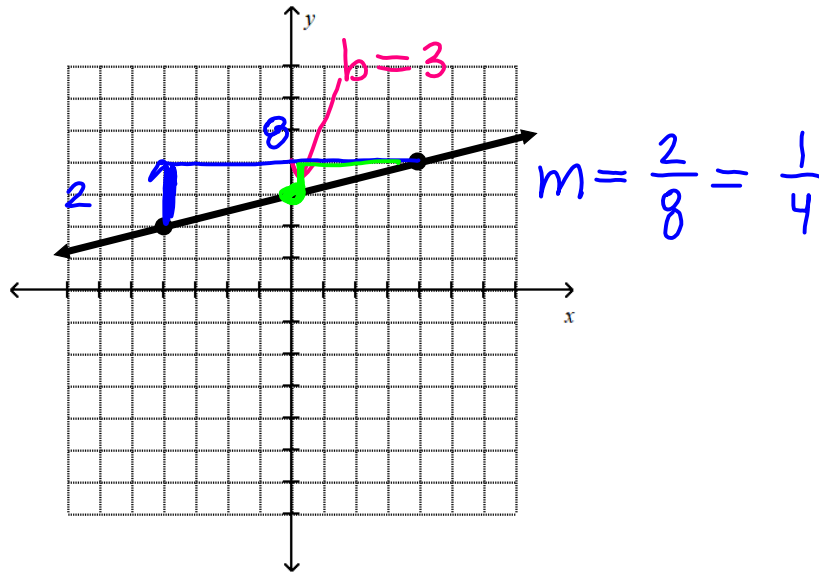$$\frac{-2y}{-2} = \frac{10x}{-2} - \frac{6}{-2}$$

$$y = -5x + 3$$

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

$$y\text{-int} = 3$$

$$y = mx + b$$

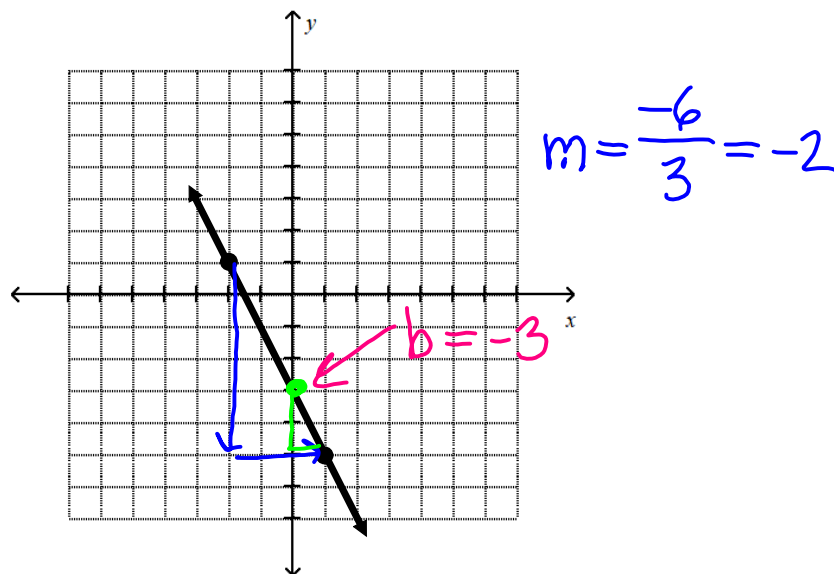10. Write an equation in *slope-intercept form* of the line graphed below.

$b = 3$

8

2

$$m = \frac{2}{8} = \frac{1}{4}$$

Answer: $y = \frac{1}{4}x + 3$

$$y = mx + b$$

11. Write an equation in *slope-intercept form* of the line graphed below.

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

$b = -3$

Answer: $y = -2x - 3$

12. Graph the equation. $x = -6$ vertical line
$$x = \#$$
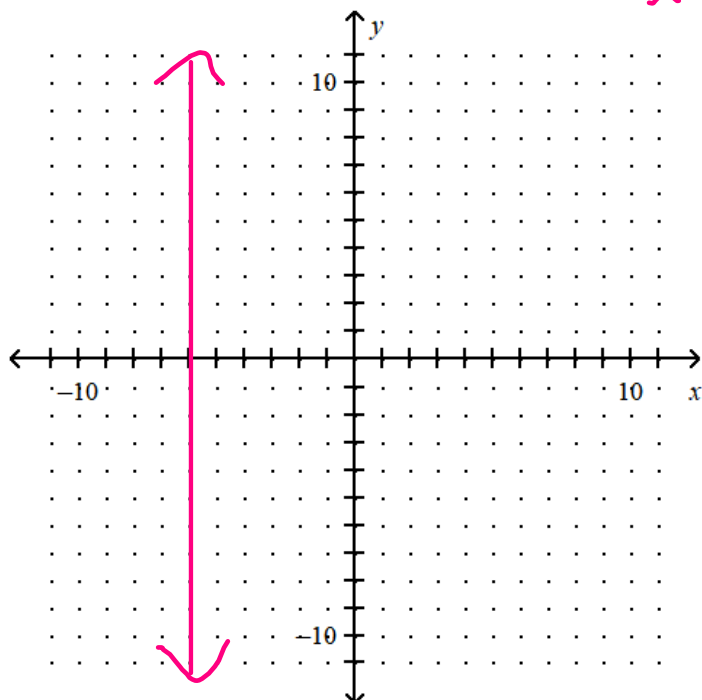
13. Graph the equation. $y = 3$ horizontal line
$$y = \#$$