Announcements:

. Unit Test (Ch. 4 & 5 & 6.7) - Tuesday, 4/3

. Last day of the quarter is Thursday, 4/12

. Last day for make-up work (excused!) is Monday, 4/9

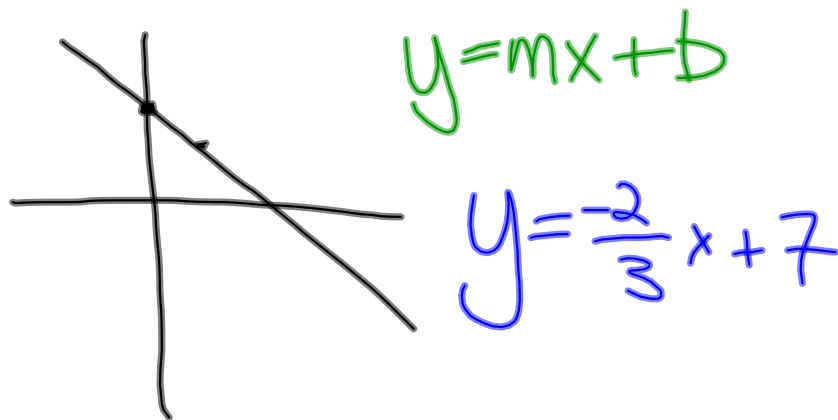# Writing an Equation if you know slope and y-intercept:

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

$$y\text{-intercept} = 7 = b$$

Slope = m

$$y = mx + b$$

y-intercept = b

$$y = \frac{-2}{3}x + 7$$

Use slope-intercept form!

Write an equation of the line with the given slope and *y*-intercept.

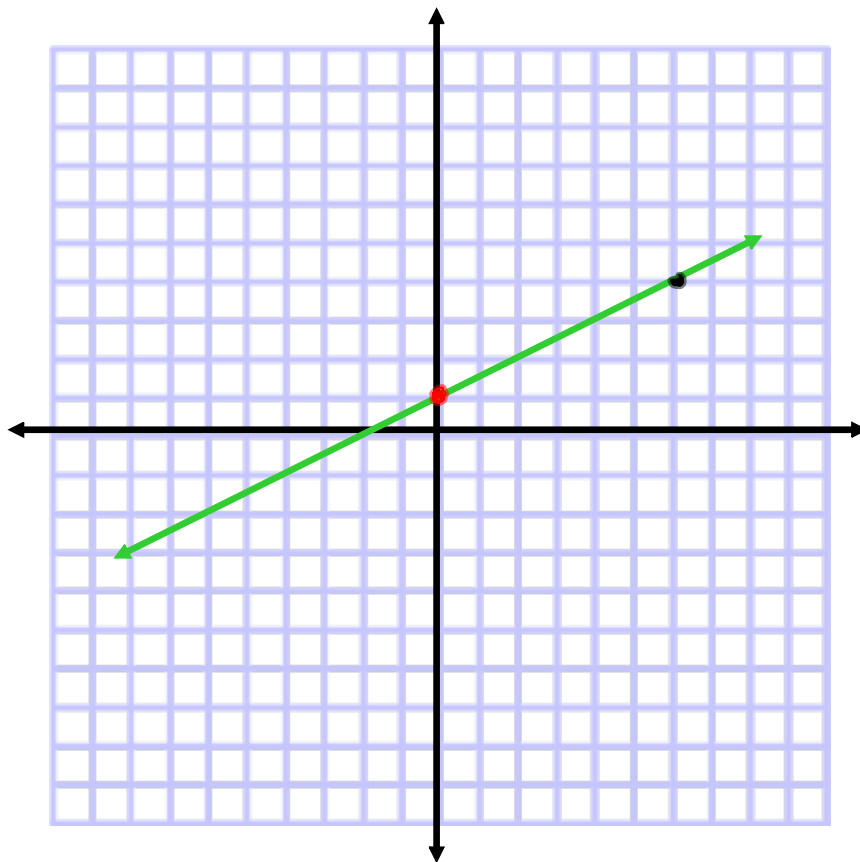**1.** slope: 7; *y*-intercept: 4   **2.** slope: -3; *y*-intercept: 5   **3.** slope: 1; *y*-intercept: -6

$$y = 7x + 4$$

$$y = -3x + 5$$

$$y = x - 6$$

Writing an Equation from a Graph:

Manual method...

Visually identify the y-intercept

$(0, 1)$ $b = 1$
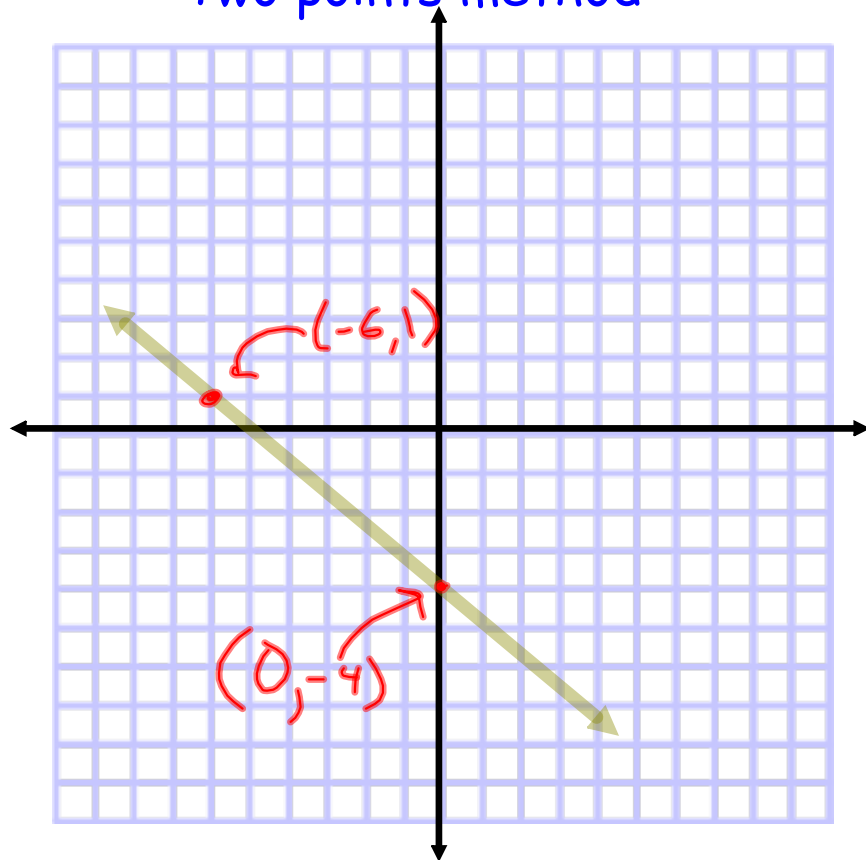
Count the rise and run and reduce

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

Write the equation

$$y = \frac{1}{2}x + 1$$

Writing an Equation from a Graph

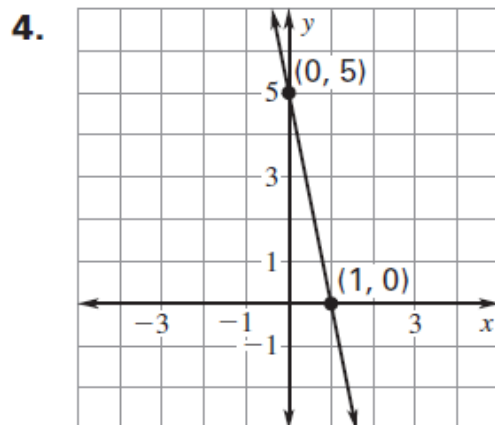**Two points method**

Calculate the slope using the slope formula

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-4-1}{0--6} = \frac{-5}{6}$$

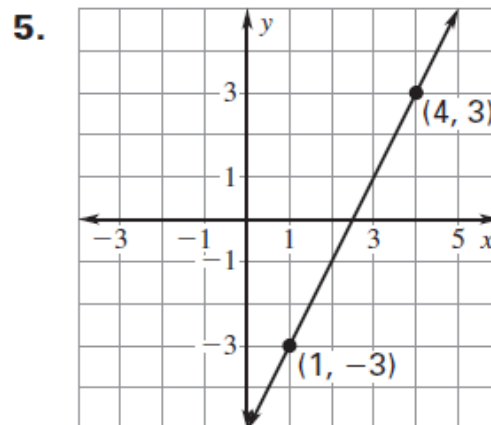Use the graph to determine the y-intercept of the line $b = -4$

Using the slope-intercept form of the equation of a line, substitute in the slope and y-intercept you found

$$y = \frac{-5}{6}x - 4$$

Graph points: $(-6, 1)$ and $(0, -4)$

Write an equation of the line shown.

4.

(0, 5)

(1, 0)

5.

(4, 3)

(1, −3)

6.

(4, 6)

(−4, 0)
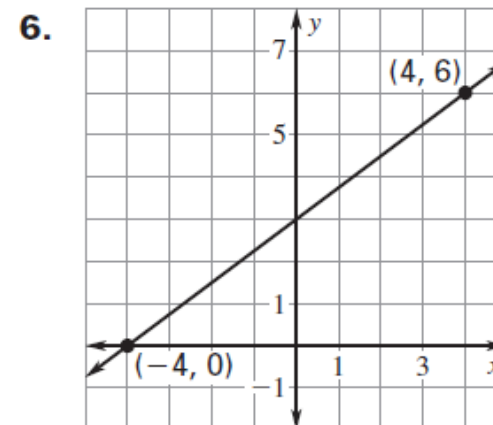
$$m = \frac{-5}{1} = -5$$
$$b = 5$$
$$y = -5x + 5$$

$$m = \frac{6}{3} = 2$$
$$b = -5$$
$$y = 2x - 5$$

$$m = \frac{6}{8} = \frac{3}{4}$$
$$b = 3$$
$$y = \frac{3}{4}x + 3$$

Write an equation of the line that passes through the given points.

7. $(-1, 0), (0, -2)$ 8. $(0, 4), (6, 13)$

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

$\dfrac{-2 - 0}{0 - 1} = \dfrac{-2}{1} = -2$

$b = -2$

$y = -2x - 2$

$m = \dfrac{y_2 - y_1}{x_2 - x_1} = \dfrac{4 - 13}{0 - 6} = \dfrac{-9}{6}$

$m = \dfrac{3}{2}$

$b = 4$

$y = \dfrac{3}{2}x + 4$

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

$= \dfrac{13 - 4}{6 - 0} = \dfrac{9}{6} = \dfrac{3}{2}$

Write an equation for the linear function f with the given values.

13. $f(0) = -1, f(3) = -10$ **14.** $f(-4) = 5, f(0) = 2$ **15.** $f(-4) = -2, f(0) = 7$

x y x y $y = mx + b = f(x)$ y x

$(0, -1) \quad (3, -10)$ $(-4, -2) \quad (0, 7)$

$$f(x) = mx + b$$

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-10 - ^-1}{3 - 0}$$

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{7 - ^-2}{0 - ^-4}$$

$$m = \frac{-9}{3} = -3$$

$$m = \frac{9}{4}$$

$$b = -1$$

$$b = 7$$

$$y = -3x - 1$$

$$y = \frac{9}{4}x + 7$$

Laser Printer A laser printer has a "sleep" mode that is an energy-saving feature. When a job is sent to the printer, it takes 45 seconds for the printer to warm up and then the printer prints pages at a rate of 6 pages per minute.

a. Write the time it takes the printer to warm up in minutes.

$$45 \text{ sec.} \cdot \frac{1 \text{ min}}{60 \text{ sec}} = \frac{45}{60} \text{ min} = \frac{3}{4} \text{ min.} = .75 \text{ min.}$$

b. Write an equation that gives the total amount of time (in minutes) it takes the printer to warm up and print a job as a function of the number of pages in the job.

$$f(x) = \frac{1}{6} x + \frac{3}{4}$$

c. Find out how long it takes the printer to print a 50-page job if it must first warm up.

$$f(50) = \frac{1}{6}(50) + \frac{3}{4} = 9.08 \text{ min}$$

Homework:

p. 286, 4-28 (even), 45, 46