4.1 *Write Linear Equations in Slope-Intercept Form*

$$y = mx + b$$
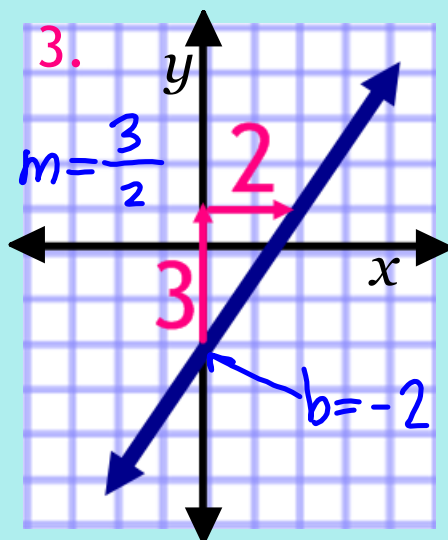
1. Write an equation of the line with a slope of -4 and a y-intercept of 7.

$$y = -4x + 7$$

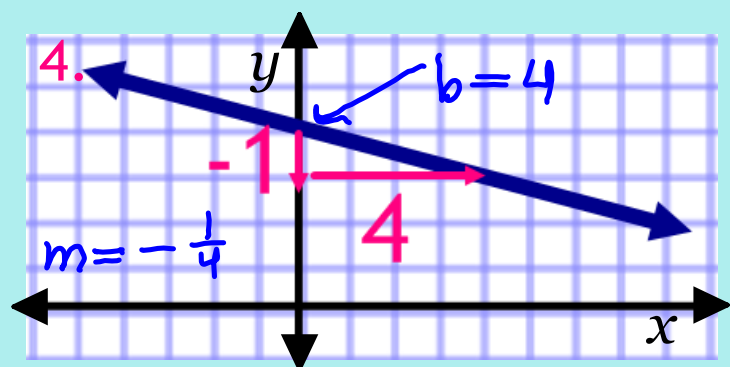m ... b

2. Write an equation of the line with a slope of $\frac{2}{3}$ and a y-intercept of -8.

$$y = \frac{2}{3}x - 8$$

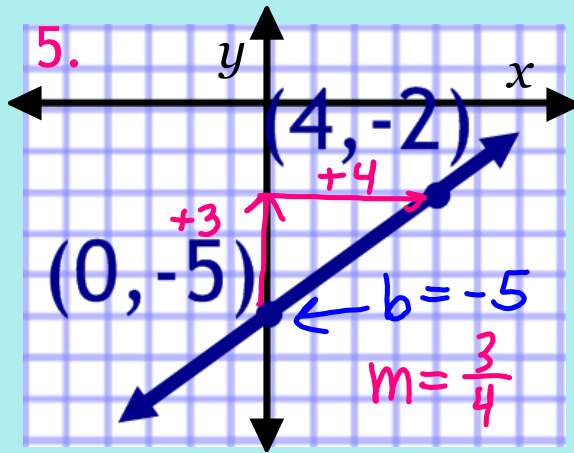m ... b

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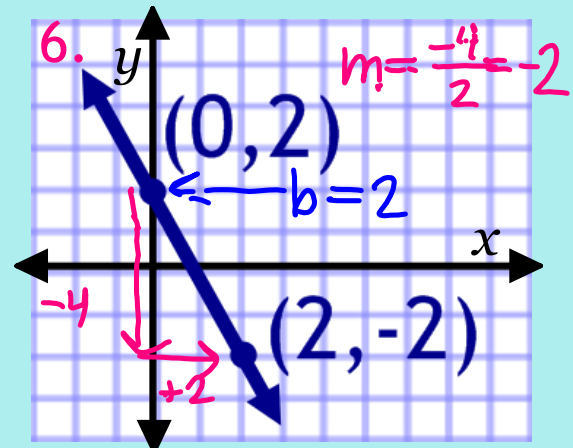Write an equation of the line in each graph.

3.

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

2

3

$b = -2$

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

4.

$b = 4$

-1

4

$m = -\frac{1}{4}$

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

Write an equation of the line in each graph.

5.

y
x
$(4,-2)$
$+4$
$+3$
$(0,-5)$
$\leftarrow b=-5$
$m=\frac{3}{4}$

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

6.

y
$m=\frac{-4}{2}=-2$
$(0,2)$
$\leftarrow b=2$
x
-4
$(2,-2)$
$+2$

$$y=-2x+2$$

7. Write an equation of the line that passes through $(2,-7)$ and $(0,-5)$.   y-int $=-5$
$x_1 \; y_1$ $x_2 \; y_2$

$$m=\frac{y_2-y_1}{x_2-x_1}=\frac{-5+-7}{0-2}=\frac{2}{-2}=-1$$

$$y=-x-5$$

8. Write an equation of the line that passes

$y\text{-int} = -1$ through $(0, -1)$ and $(5, -5)$.

$$x_1 \quad y_1 \qquad x_2 \quad y_2$$

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

$$y = -\frac{4}{5}x - 1$$

9. Write an equation for the linear function f with the values $f(0) = 5$ and $f(4) = 17$.

$$y\text{-int} = 5 \longrightarrow (0, 5) \qquad (4, 17)$$

$$x_1 \quad y_1 \qquad\qquad x_2 \quad y_2$$

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{17 - 5}{4 - 0} = \frac{12}{4} = 3$$

$$y = 3x + 5$$

$$f(x) = 3x + 5$$

10. Write an equation for the linear function f with the values $f(-3) = -2$ and $f(0) = 5$.

$$(-3, -2) \qquad (0, 5)$$
$$x_1 \quad x_1 \qquad x_2 \quad y_2$$

y-int = 5

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{5 + 2}{0 + 3} = \frac{7}{3}$$

$$y = \frac{7}{3}x + 5$$

$$f(x) = \frac{7}{3}x + 5$$

11. A recording studio charges musicians an initial fee of $75 and charges $40 per hour for studio time.

y-int   slope

a) Write an equation that gives the total cost of an album as a function of studio time.

$$y = 40x + 75$$

b) Find the total cost of recording an album that takes 10 hours of studio time.

$$x$$

$$y = 40(10) + 75$$
$$y = 400 + 75$$
$$y = \$475$$