

Algebra 1A

Lesson 5.1

Writing Linear Equations in

Slope - Intercept Form

Warm-Up

Find the slope of the line passing through the given points.

(a) $(2, -1)$ and $(4, 0)$

$$m = \frac{0 - (-1)}{4 - 2} = \frac{1}{2}$$

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

(b) $(-1, -3)$ and $(1, 5)$

$$m = \frac{5 - (-3)}{1 - (-1)} = \frac{8}{2}$$

$$m = 4$$

(c) $(3, 5)$ and $(2, -5)$

$$m = \frac{-5 - 5}{2 - 3} = \frac{-10}{-1}$$

$$m = 10$$

(d) $(4, 6)$ and $(6, 4)$

$$m = \frac{4 - 6}{6 - 4} = \frac{-2}{2}$$

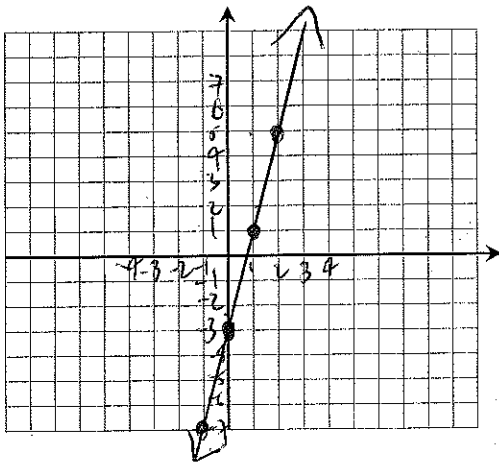
$$m = -1$$

Example 1. Use Slope and y-intercept to Write an Equation

Write an equation for the line with the given information. Then graph the line on the axes provided.

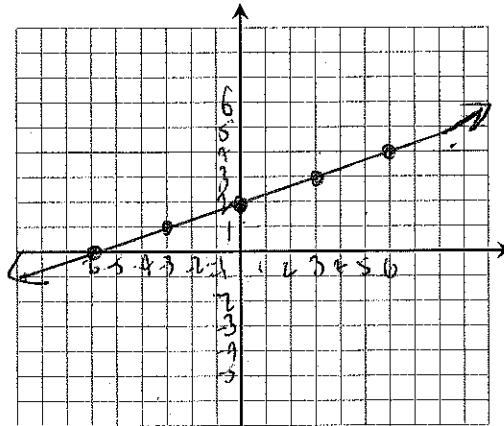
(a) $m = 4$
 $b = -3$

$$y = 4x - 3$$



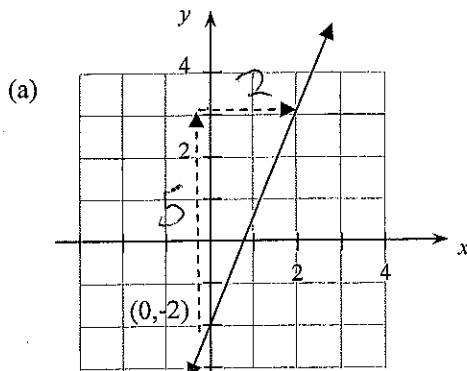
(b) $m = \frac{1}{3}$
 $b = 2$

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



Example 2. Write an Equation of a Line Based on a Graph

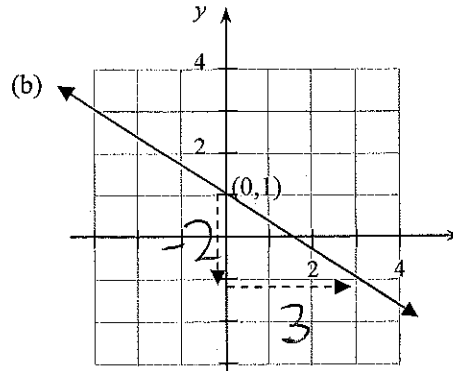
Write the equation that represents the line shown.



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

$$b = -2$$

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



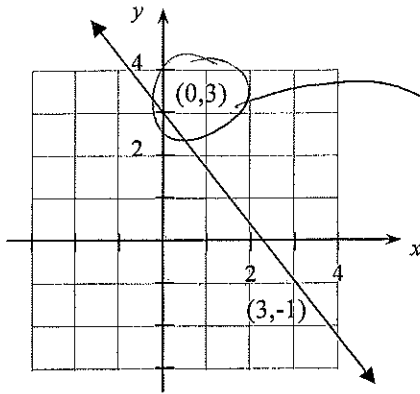
$$m = -\frac{2}{3}$$

$$b = 1$$

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

Example 3. Write an Equation of a Line Given Two Points
Write an equation of the line shown.

$$(0, 3) \quad (3, -1)$$



Step 1 - Calculate slope

$$m = \frac{-1-3}{3-0} = \frac{-4}{3}$$

Step 2 - Use the y-intercept and slope to write $y = mx + b$

$$b = 3$$

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

Example 4. Write a Linear Function

(a) Write an equation for the linear function f with values $f(0) = 3$ and $f(-4) = 11$.

$$f(x) = -2x + 3$$

$$(0, 3) \quad (-4, 11)$$

$$b = 3$$

$$m = \frac{11-3}{-4-0} = \frac{8}{-4} = -2$$

(b) Write an equation for the linear function f with values $f(0) = -2$ and $f(8) = 4$.

$$f(x) = \frac{3}{4}x - 2$$

$$(0, -2) \quad (8, 4)$$

$$b = -2$$

$$m = \frac{4-(-2)}{8-0} = \frac{6}{8} = \frac{3}{4}$$

Homework:

New Assignment: Pg. 286 #8-32 (evens), 45

Review Assignment:

Solve.

1. $\frac{3}{5}x - 7 = 17$

2. $4\left(\frac{1}{2}x + \frac{1}{2}\right) = 2x + 2$

Write the equation in slope-intercept form.

3. $-3x + 2y = 6$

4. $2x - 4y + 6 = 0$