

Writing Linear Equations Day 1 Notes

Name: \_\_\_\_\_

Objective: I can write linear equations using slope-intercept form.

Slope-intercept form:  $y = mx + b$

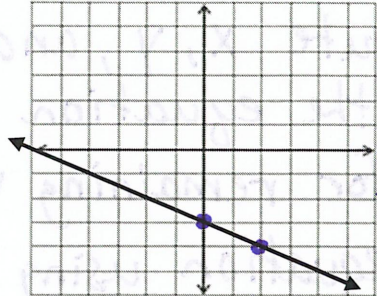
What is the equation of the line shown on the graph?

~~a)  $y = 2x - 3$~~

b)  $y = -2x - 3$

~~c)  $y = \frac{1}{2}x - 3$~~

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



Write an equation of a line with the given slope  $m$  and y-intercept  $b$ .

1.)  $m = -1, b = 3$

$y = -1x + 3$

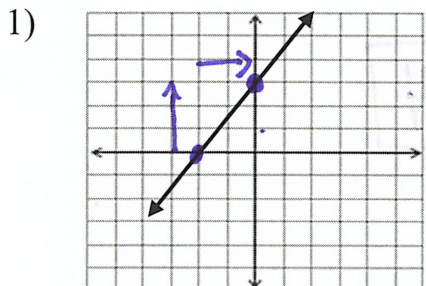
2.)  $m = \frac{5}{8}, b = -2$

$y = \frac{5}{8}x - 2$

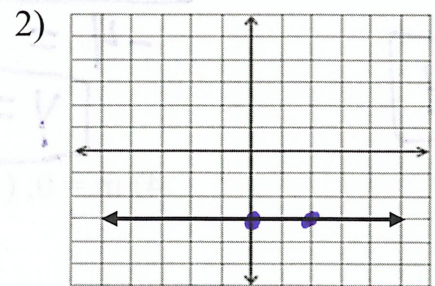
3.)  $m = 0, b = -2$

$y = 0x - 2$   
 $y = -2$

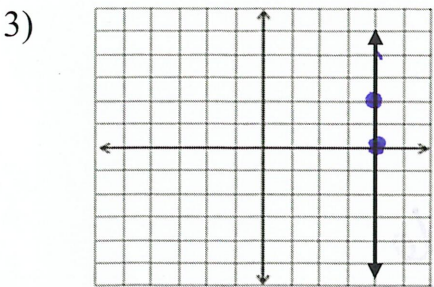
Write an equation in slope-intercept form of each line.



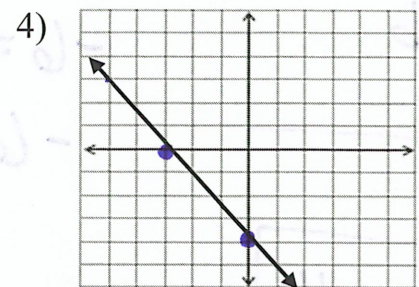
$m = \frac{1}{2}$   $b = 3$   
 $y = \frac{1}{2}x + 3$



$m = \frac{0}{2} = 0$   
 $b = -3$   
 $y = 0x - 3$   
 $y = -3$



$m = \frac{2}{0}$   $b = \text{NONE}$   
undefined  
 $x = 4$



$m = -\frac{2}{1} = -2$   
 $b = -4$   
 $y = -2x - 4$

Write an equation of a line with the given slope  $m$  and point on the line.

$$y = mx + b$$

Steps:

- 1) identify  $(x, y)$
- 2) write out in slope-int form
- 3) substitute  $x, y,$  and  $m$  or  $b$  into the equation
- 4) solve for remaining variable.
- 5) write equation using "m" and "b"

1)  $m = -2, (1, 2)$

$x \quad y$

$$y = mx + b$$

$$2 = -2(1) + b$$

$$2 = -2 + b$$

$$+2 \quad +2$$

$$4 = b$$

$$y = -2x + 4$$

3)  $m = -3, (4, 2)$

$x \quad y$

$$y = mx + b$$

$$2 = -3(4) + b$$

$$2 = -12 + b$$

$$+12 \quad +12$$

$$14 = b$$

$$y = -3x + 14$$

2)  $m = -1/2, (2, -5)$

$x \quad y$

$$y = mx + b$$

$$-5 = -\frac{1}{2}(2) + b$$

$$-5 = -1 + b$$

$$+1 \quad +1$$

$$-4 = b$$

$$y = -\frac{1}{2}x - 4$$

4)  $m = 0, (-4, -6)$

$x \quad y$

$$y = mx + b$$

$$-6 = 0(-4) + b$$

$$-6 = 0 + b$$

$$-6 = b$$

$$y = 0x - 6$$
$$y = -6$$