

3.4 Writing the Equation of a Line

Slope Intercept Form: $y = mx + b$

$m = \text{slope}$

$b = y \text{ intercept}$

To write the equation of a line from a graph:

- (1) Identify the y intercept (b)
- (2) Find the slope $= \frac{\text{rise}}{\text{run}}$ (m)
- (3) Write the equation using m and b

$$y = mx + b$$

Examples: Write the equation of the line in slope intercept form.

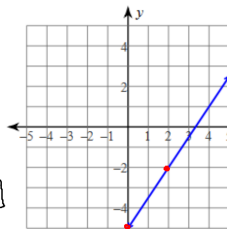
1.

$$b = -5$$

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

$$y = mx + b$$

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



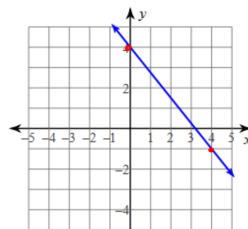
2.

$$b = 4$$

$$m = -\frac{5}{4}$$

$$y = mx + b$$

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



3.

$$b = -3$$

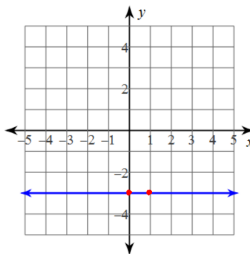
$$m = \frac{0}{1}$$

$$m = 0$$

$$y = mx + b$$

$$y = 0x - 3$$

$$y = -3$$



4.

$$b = 4$$

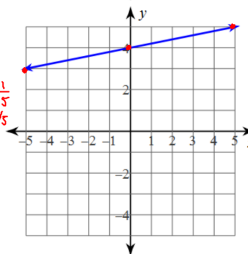
$$m = \frac{1}{5}$$

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

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

$$y = mx + b$$

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



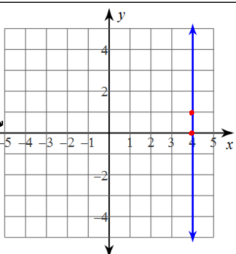
5.

$$x = 4$$

$$b = \text{no } y \text{ intercept}$$

$$m = \frac{1}{0}$$

$$= \text{undefined}$$



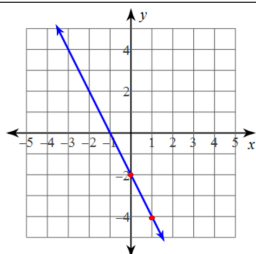
6.

$$b = -2$$

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

$$y = mx + b$$

$$y = -2x - 2$$



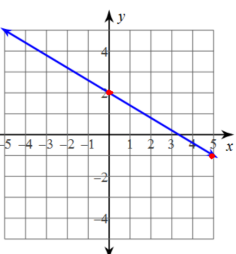
7.

$$b = 2$$

$$m = -\frac{3}{5}$$

$$y = mx + b$$

$$y = -\frac{3}{5}x + 2$$



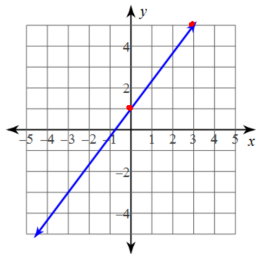
8.

$$b = 1$$

$$m = \frac{4}{3}$$

$$y = mx + b$$

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



9. Choose the correct graph for the given equation:

$$x - 5y = -5$$

$$x - 5y = -5$$

$$-5y = -x - 5$$

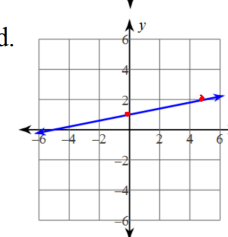
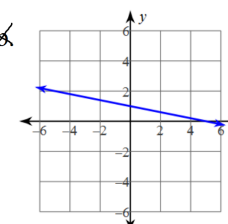
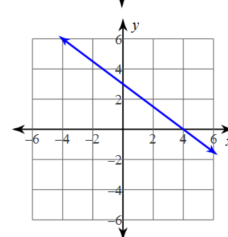
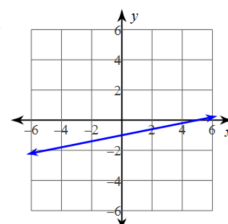
$$y = \frac{-x - 5}{-5}$$

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

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

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

$$b = -1$$



HOMEWORK

Worksheet - HW 3.4 Writing the Equation of a Line