

Grab the 5.1 Notes as you Come In

Warm Up

Write down what you are going to do next trimester to be successful in Algebra.

*What are you going to continue to do?

*What should you do differently?

5.1 Slope-Intercept Form

Goal Use the slope-intercept form to write an equation of a line.

SLOPE-INTERCEPT FORM

The slope-intercept form of the equation of a line with slope m and y-intercept b is

$$y = mx + b$$

\uparrow \leftarrow y-int.
 Slope

Example 1 Equation of a Line

Write an equation of the line whose slope is 4 and whose y-intercept is -3.

Solution

1. Write the slope-intercept form.

$$y = mx + b$$

2. Substitute slope 4 for m and -3 for b .

$$y = 4x + -3$$

3. Simplify the equation.

$$y = 4x - 3$$

Answer The equation of the line is

$$y = 4x - 3$$

✓ **Checkpoint** Write an equation of the line in slope-intercept form.

1. The slope is 3 and the y-intercept is 7.

$$m = 3 \quad b = 7$$

$$y = 3x + 7$$

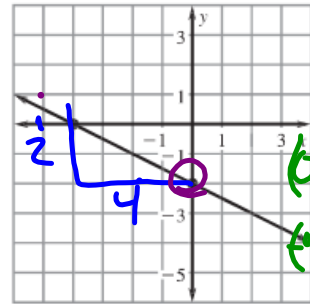
2. The slope is -5 and the y-intercept is 1.

$$m = -5 \quad b = 1$$

$$y = -5x + 1$$

Example 2 Use a Graph to Write an Equation

Write the equation of the line shown in the graph using slope-intercept form.



Solution

1. Write the slope-intercept form
 $y = mx + b$.

2. Find the slope m of the line. Use any two points on the graph. Let $(-4, 0)$ be (x_1, y_1) and $(0, -2)$ be (x_2, y_2) .

$$m = \frac{\text{rise}}{\text{run}} = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-2 - 0}{0 - (-4)} = \frac{-2}{4} = -\frac{1}{2}$$

3. Use the graph to find the y-intercept b . The graph of the line crosses the y-axis at $(0, -2)$. The y-intercept is -2 .

4. Substitute slope $-\frac{1}{2}$ for m and -2 for b in the equation

$$y = mx + b$$

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

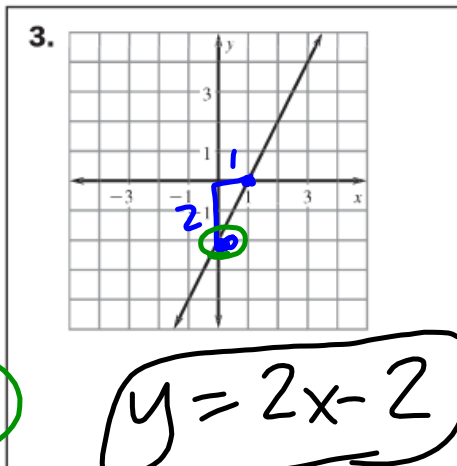
Answer The equation of the line is

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

Recall that the y-intercept is the y-coordinate of the point where the line crosses the y-axis.

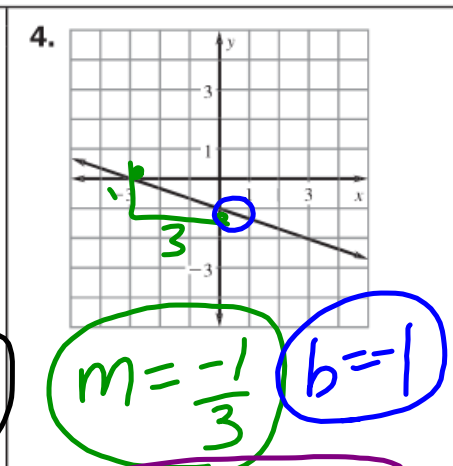
Handwritten notes:
 $m = -\frac{1}{2}$
 $m = -\frac{1}{2}$
 $b = -2$

✓ **Checkpoint** Write an equation of the line in slope-intercept form.



Handwritten notes:
 $m = 2$
 $m = 2$
 $b = -2$

$$y = 2x - 2$$



Handwritten notes:
 $m = -\frac{1}{3}$
 $b = 1$

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

Define the Line wkst - DUE by End of HR

5.1 wkst on Table - EC for Test

(can skip word problems)

*MISSING WORK?

*Find something QUIET to work on