

Module 5 Lesson 5

Are You Ready? Possible Solutions

1. a. general form
b. slope-intercept form
c. slope-point form

2. a. $4x + 5y = 25$

$$4x + 5y - 4x = 25 - 4x$$

$$5y = -4x + 25$$

$$\frac{5y}{5} = \frac{-4x}{5} + \frac{25}{5}$$

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

The slope is $-\frac{4}{5}$, and the y -intercept is $(0, 5)$.

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

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

$$x + 6 = 2y$$

$$2y = x + 6$$

$$\frac{2y}{2} = \frac{x}{2} + \frac{6}{2}$$

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

The slope is $\frac{1}{2}$, and the y -intercept is $(0, 3)$.

3. a. The slope-intercept form of the equation is $y = mx + b$. The graph crosses the y -axis at -2 , so the y -intercept is $(0, -2)$. We can now fill in -2 for the b value.

$$y = mx - 2$$

From the graph the rise is 1 and the run is 2.

$$\text{slope} = \frac{\text{rise}}{\text{run}}$$

$$\text{slope} = \frac{1}{2}$$

Complete the equation by substituting $m = \frac{1}{2}$.

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

- b. The slope-point form of the equation is $y - y_1 = m(x - x_1)$. The slope is $\frac{1}{2}$. You can choose any point on the graph as the (x_1, y_1) point. For example, $(2, -1)$ is on the graph, so you can substitute these values in for (x_1, y_1) .

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

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

- c. Rearrange the slope-intercept form so that all of the terms are on the right side and the denominator is cleared.

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

$$2(y) = 2\left(\frac{1}{2}x\right) - 2(2)$$

$$2y = x - 4$$

$$2y - 2y = x - 4 - 2y$$

$$0 = x - 2y - 4$$

$$x - 2y - 4 = 0$$

4. a. $y = \frac{2}{3}x - 2$

$$= \frac{2}{3}(3) - 2$$

$$= 2 - 2$$

$$= 0$$

b. $2x + 5y = 31$

$$2(3) + 5y = 31$$

$$6 + 5y = 31$$

$$5y = 31 - 6$$

$$5y = 25$$

$$\frac{5y}{5} = \frac{25}{5}$$

$$y = 5$$

c. $y - 4 = -3(x - 1)$

$$y - 4 = -3(3 - 1)$$

$$y - 4 = -3(2)$$

$$y - 4 = -6$$

$$y = -6 + 4$$

$$y = -2$$