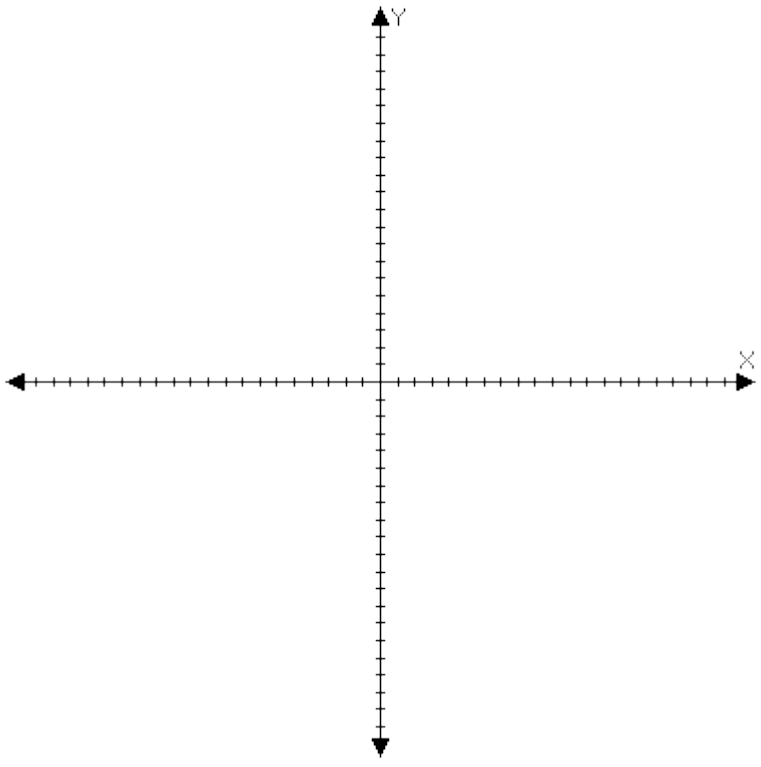
Review Exercise Set 9

Exercise 1: Write the given linear equation in slope-intercept form. State the slope and y-intercept of the linear equation.

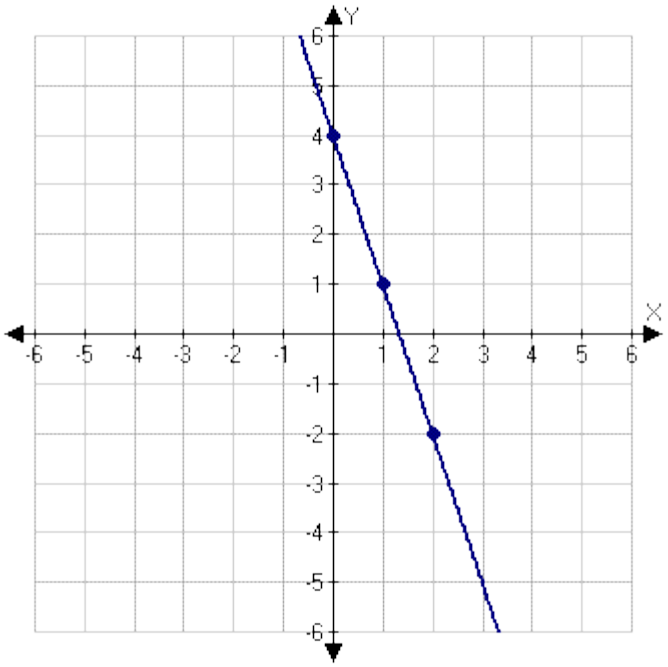
$7x + 3y - 8 = 0$

Exercise 2: Determine the slope and y-intercept in the given linear equation. Graph the line using the y-intercept and slope.

$7x = 5y + 20$



Exercise 3: Determine the slope and equation of the line in given graph.



Exercise 4: Write the equation of the line, with the given properties, in slope-intercept form.

$$m = -\frac{1}{6} \ \textit{and} \ \ p = (-6, 5)$$

Exercise 5: Write the equation of the line, with the given properties, in standard form.

p = (-2, 4) and perpendicular to $y = \frac{1}{5}x + 1$

Review Exercise Set 9 Answer Key

Exercise 1: Write the given linear equation in slope-intercept form. State the slope and y-intercept of the linear equation.

$$7x + 3y - 8 = 0$$
$$3y = -7x + 8$$
$$y = -\frac{7}{3}x + \frac{8}{3}$$

slope (m) = $-\frac{7}{3}$ and the y-intercept (0, b) = (0, $\frac{8}{3}$)

Exercise 2: Determine the slope and y-intercept in the given linear equation. Graph the line using the y-intercept and slope.

7x = 5y + 20

First, rewrite the equation into slope-intercept form

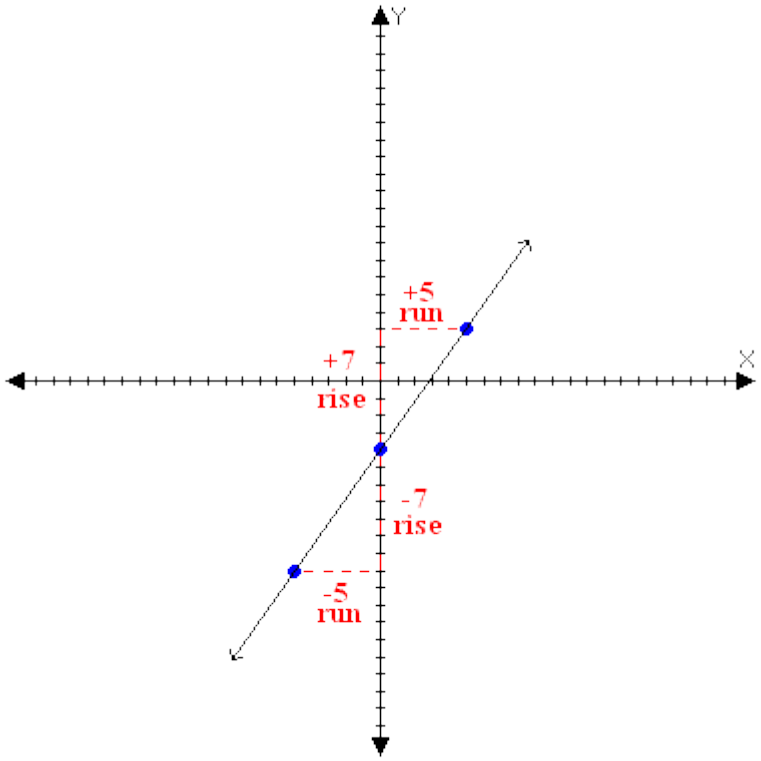
$$7x - 20 = 5y$$
$$\frac{7}{5}x - 4 = y$$
$$y = \frac{7}{5}x - 4$$

slope (m) = $\frac{7}{5}$ and the y-intercept (0, b) = (0, -4)

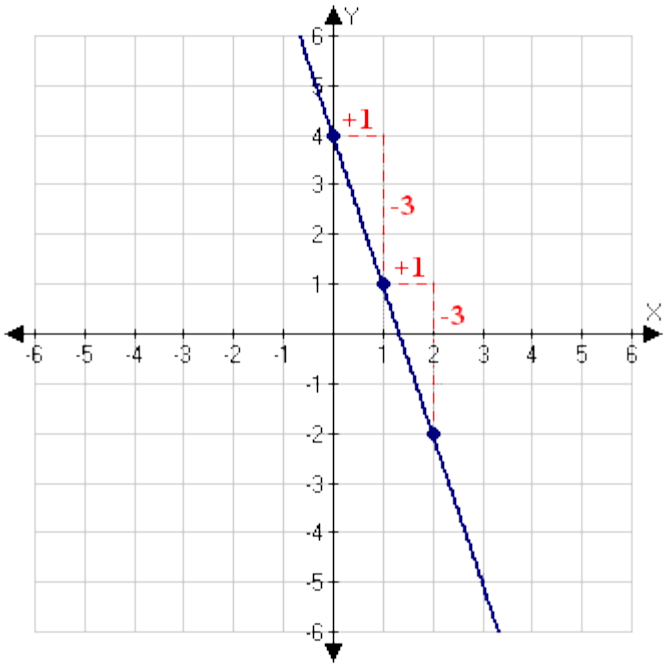
Exercise 2 (Continued):

Now, plot the intercept and use the slope to plot additional points

$$m = \frac{7}{5} = \frac{-7}{-5} = \frac{rise}{run}$$



Exercise 3: Determine the slope and equation of the line in given graph.



From the graph determine the rise and run between the points

rise = -3
run = 1

$$m = \frac{rise}{run} = \frac{-3}{1} = -3$$

Now substitute the slope and the y-intercept into the slope-intercept form of a line.

m = -3 and y-intercept = (0, 4)

y = mx + b
y = -3x + 4

Exercise 4: Write the equation of the line, with the given properties, in slope-intercept form.

$$m = -\frac{1}{6} \ \ and \ \ \ p = (-6, 5)$$

Since we are not given the y-intercept use the point-slope form of a line to determine the equation of the line. Point p will be (x_1, y_1)

Exercise 4 (Continued):

$$y - y_1 = m(x - x_1)$$
$$y - 5 = -\frac{1}{6}(x - (-6))$$
$$y - 5 = -\frac{1}{6}(x + 6)$$
$$y - 5 = -\frac{1}{6}x - 1$$
$$y = -\frac{1}{6}x - 1 + 5$$
$$y = -\frac{1}{6}x + 4$$

Exercise 5: Write the equation of the line, with the given properties, in standard form.

p = (-2, 4) and perpendicular to y = $\frac{1}{5}$ x + 1

First, determine the slope of the given line

$$m_1 = \frac{1}{5}$$

Next, determine the perpendicular slope (m_2)

$$m_1 \times m_2 = -1$$
$$\frac{1}{5} \times m_2 = -1$$
$$m_2 = -5$$

Now, substitute p as (x_1, y_1) and m_2 as m into the point-slope form to find the equation of the line

(x_1, y_1) = (-2, 4); m = -5

$y - y_1 = m(x - x_1)$
$y - 4 = -5[x - (-2)]$
$y - 4 = -5(x + 2)$
$y - 4 = -5x - 10$
$y - 4 + 5x + 10 = 0$
$5x + y + 6 = 0$