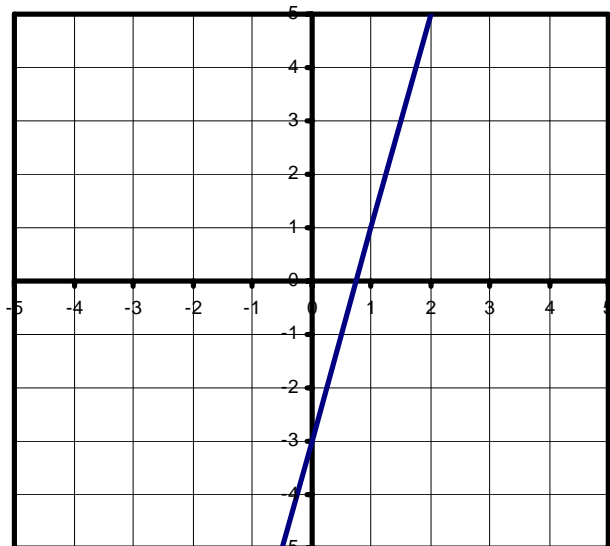
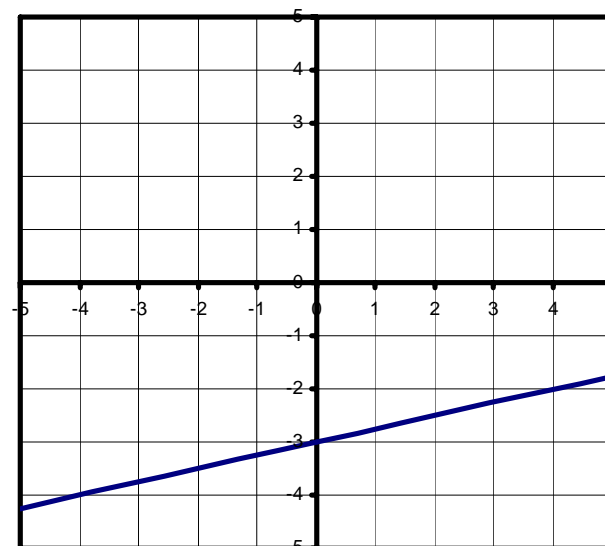


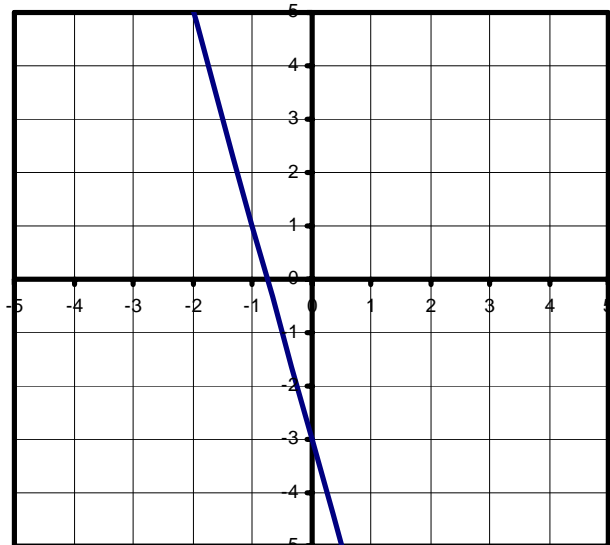
Equations and Slope



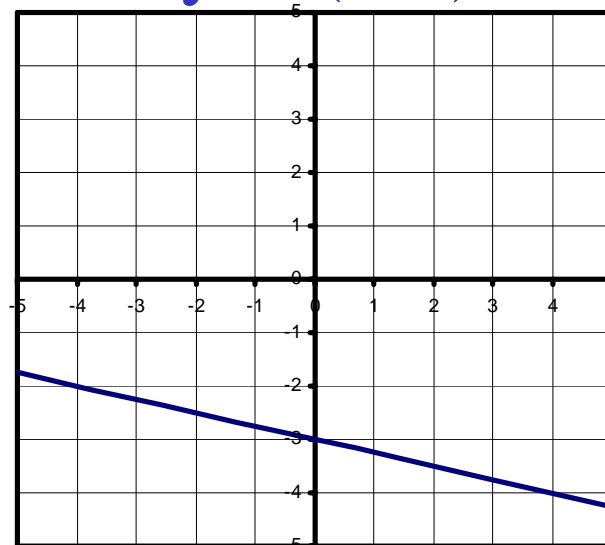
$$y = 4x - 3$$



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



$$y = -4x - 3$$



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

Slope-Intercept Form of Linear Equations

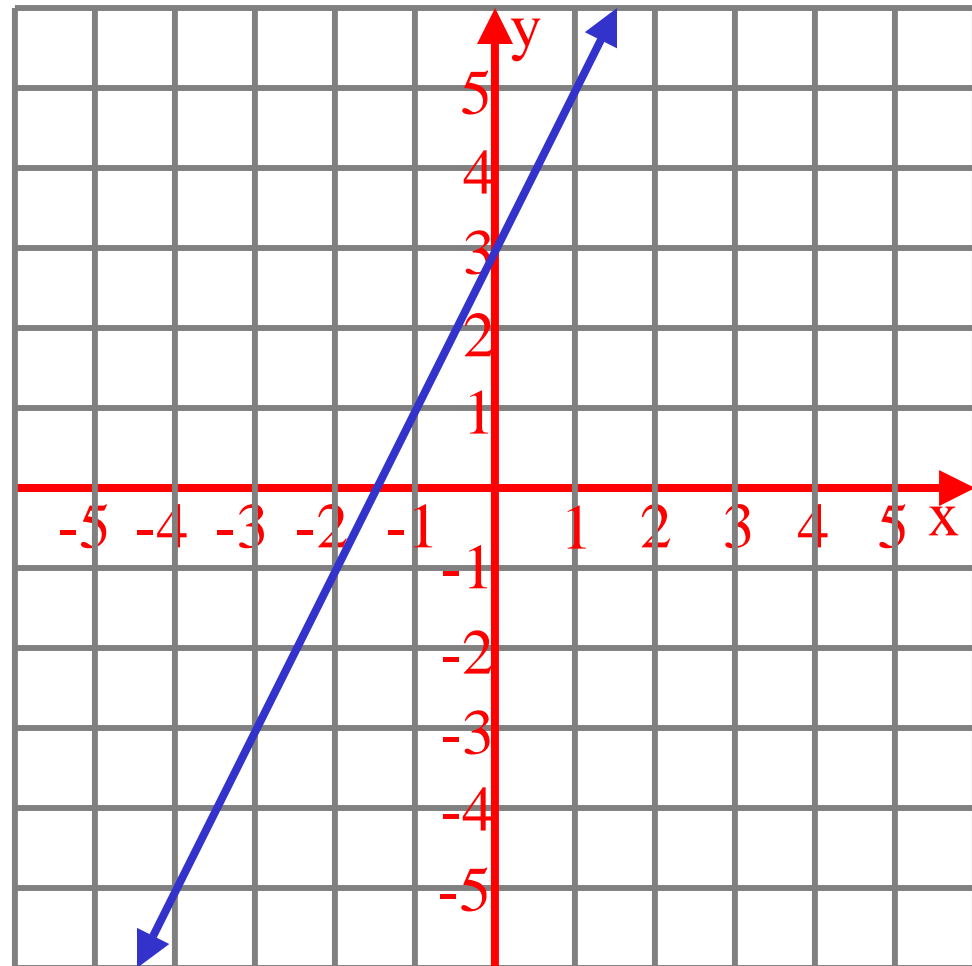
- The slope is the coefficient of the x-term in a y-form linear equation.
- The y-form of a linear equation is called the *slope intercept form* of the line.
- The slope-intercept form of an equation is written as $y = mx + b$
- *m is the slope* of the line
- *b is* the y coefficient of *the y-intercept (0, b)*

Slope-Intercept Form

Find the slope and y-intercept of $y = 2x + 3$

slope = $m = 2$

y-intercept = $(0, 3)$



Slope-Intercept Form

Find the slope and y-intercept:

1) $y = (-3/2)x - 6$ $m = -3/2$ y-intercept = (0, -6)

2) $y = 5x$ $m = 5$ y-intercept = (0, 0)

3) $y = -8x - 2/3$ $m = -8$ y-intercept = (0, -2/3)

4) $y = 1.5x + 3.4$ $m = 1.5$ y-intercept = (0, 3.4)

Slope-Intercept Form

Find the slope and y-intercept of $9x + 3y = 12$

First put in y-form:

$$9x + 3y = 12$$

$$-9x \qquad -9x$$

$$\frac{3y}{3} = \frac{-9x + 12}{3}$$

$$y = -3x + 4$$

$$m = -3$$

$$\text{y-intercept} = (0, 4)$$

Slope-Intercept Form

Find the slope and y-intercept of $2x + 3y = 7$

First put in y-form:

$$2x + 3y = 7$$

$$\begin{array}{r} -2x \qquad \qquad -2x \\ 2x + 3y = 7 \\ \hline \end{array}$$

$$\frac{3y}{3} = \frac{-2x + 7}{3}$$

$$y = (-2/3)x + (7/3)$$

$$m = -2/3$$

$$\text{y-intercept} = (0, 7/3)$$

Slope-Intercept Form

Find the slope and y-intercept of $5x - 4y = 12$

First put in y-form:

$$5x - 4y = 12$$

$$-5x \qquad -5x$$

$$\frac{-4y}{-4} = \frac{-5x + 12}{-4}$$

$$y = (5/4)x + (-3)$$

$$y = (5/4)x - 3$$

$$m = 5/4$$

$$\text{y-intercept} = (0, -3)$$

Graphing Using Slope-Intercept

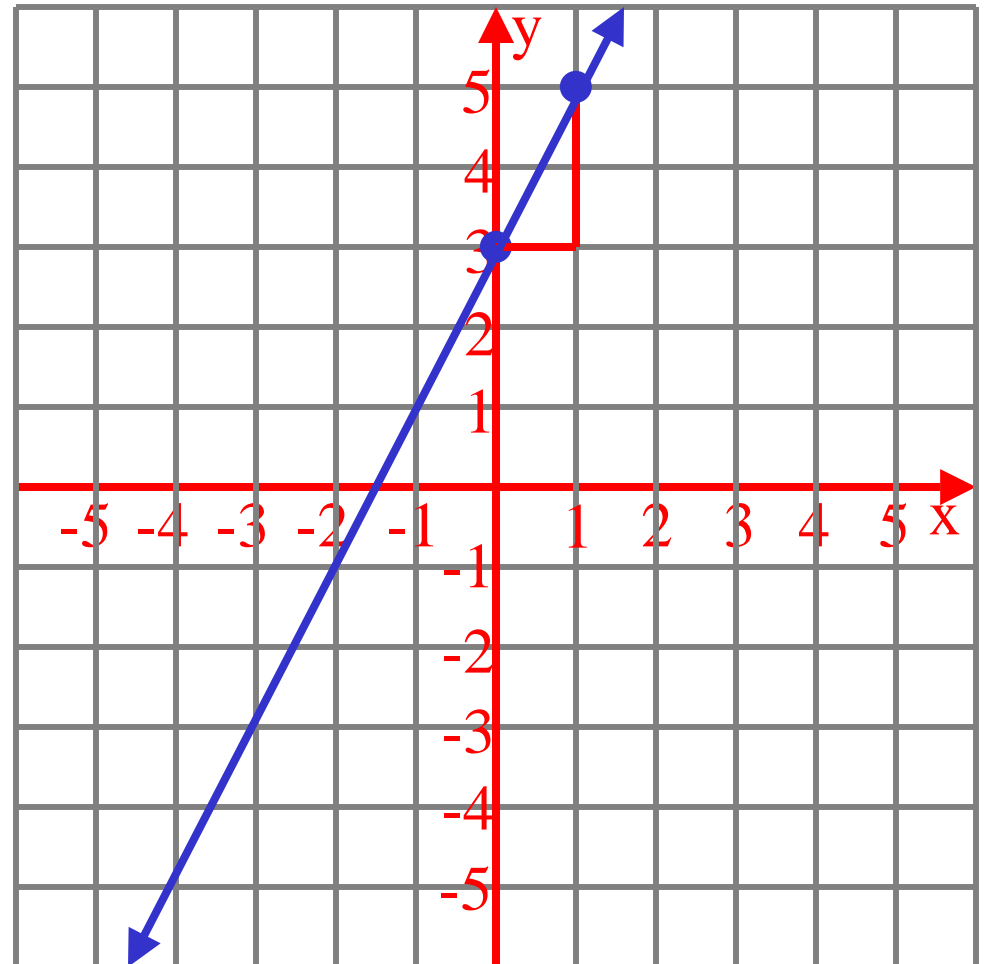
To graph an equation using the slope-intercept form of a linear equation:

1. Graph the y-intercept.
2. Use the slope to form a slope triangle.
3. Draw a line through the two points of the slope triangle.

Graphing Using Slope-Intercept

Graph $y = 2x + 3$

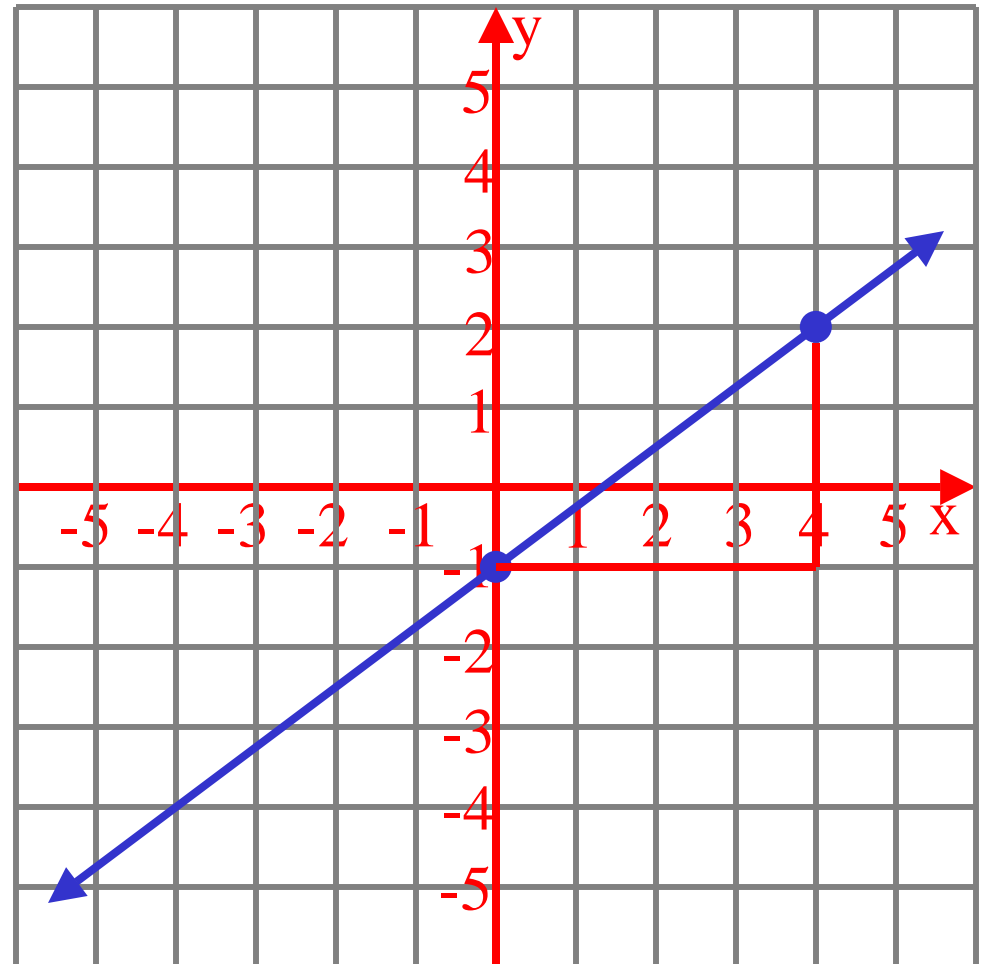
1. Graph the y-intercept $(0, 3)$
2. Think of the slope, 2, as $2/1$. Draw a rise of 2 and a run of 1.
3. Draw the line.



Graphing Using Slope-Intercept

Graph $y = (3/4)x - 1$

1. Graph the y-intercept
(0, -1)
2. The slope is $3/4$.
Draw a rise of 3 and
a run of 4.
3. Draw the line.



Graphing Using Slope-Intercept

Graph $y = (-2/3)x + 3$

1. Graph the y-intercept $(0, 3)$
2. The slope is $-2/3$.
Draw a rise of -2 and a run of 3 .
3. Draw the line.

