

# Graphing Linear Equations

**Example 1** Graph  $x + 3y = -3$  using intercepts.

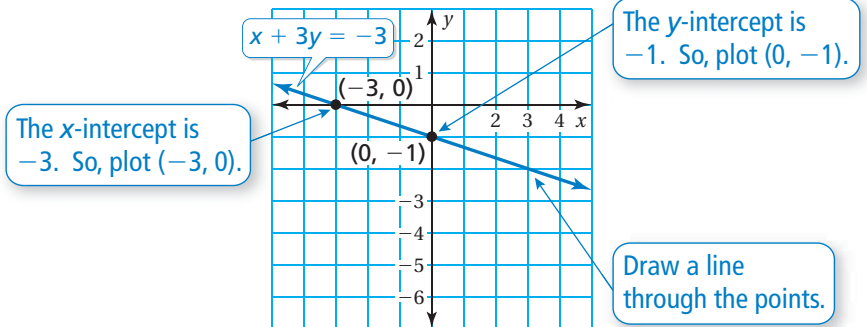
**Step 1** To find the  $x$ -intercept, substitute 0 for  $y$ .

$$\begin{aligned} x + 3y &= -3 \\ x + 3(0) &= -3 \\ x &= -3 \end{aligned}$$

To find the  $y$ -intercept, substitute 0 for  $x$ .

$$\begin{aligned} x + 3y &= -3 \\ 0 + 3y &= -3 \\ y &= -1 \end{aligned}$$

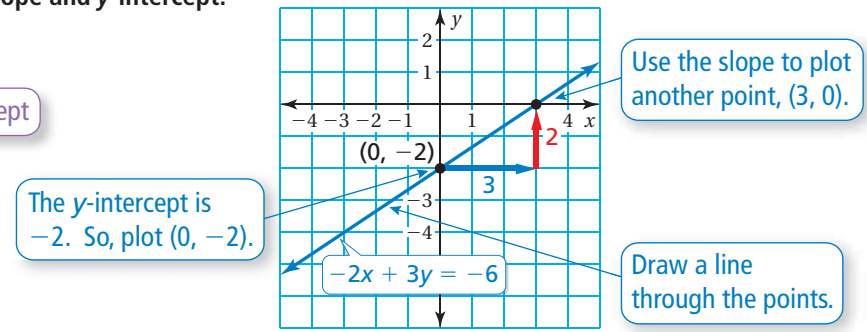
**Step 2** Graph the equation.



**Example 2** Graph  $y = \frac{2}{3}x - 2$  using the slope and  $y$ -intercept.

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

slope  $\nearrow$   $\frac{2}{3}$   $\nearrow$  y-intercept  $\nearrow$   $(-2)$

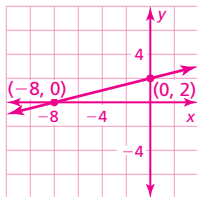


## Practice

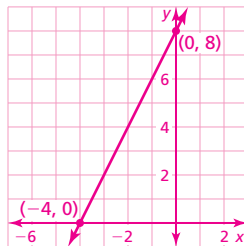
Check your answers at [BigIdeasMath.com](http://BigIdeasMath.com).

Graph the linear equation using intercepts.

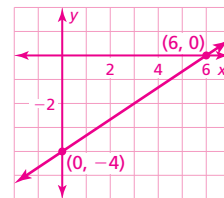
1.  $x - 4y = -8$



2.  $-18x + 9y = 72$

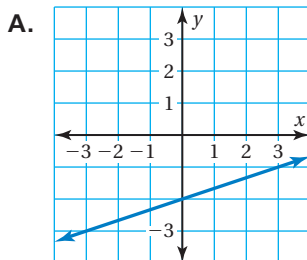


3.  $2x - 3y = 12$



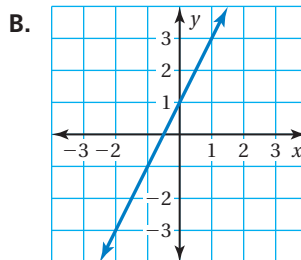
Match the equation with its graph. Identify the slope and  $y$ -intercept.

4.  $y = 2x + 1$



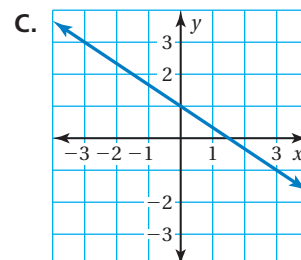
B; slope: 2,  $y$ -intercept: 1

5.  $y = \frac{1}{3}x - 2$



A; slope:  $\frac{1}{3}$ ,  $y$ -intercept:  $-2$

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



C; slope:  $-\frac{2}{3}$ ,  $y$ -intercept: 1