3.4 The Slope-Intercept Form

Consider the equation $y = mx + b$. We know that both x and y represent variables or unknowns, but we haven't yet discussed m and b in detail. From the previous section, we know that m represents the slope of the equation – how quickly y changes as x changes. The last value, b, represents the y-intercept – a topic from a few sections back – where the line crosses the y-axis.

Example 3.4.1
Identify the slope and give the y-intercept as a point for each equation below.

1. $y = 5x - 3$

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

3. $7x + y = 6$

Graphing with $y = mx + b$

1. Identify and plot the y-intercept.
2. Use the slope to find and plot a second point.
   (a) Rewrite the slope as a fraction.
   (b) Move up/down by the numerator (rise).
   (c) Move left/right by the denominator (run).

Example 3.4.2
Graph $y = 3x - 2$ using the slope and y-intercept.

Example 3.4.3
Graph $y = \frac{3}{5}x + 1$ using the slope and y-intercept.

Example 3.4.4
Graph $3x + 4y = 0$ using the slope and y-intercept. (*Hint: Solve for* y.)