

DIFFERENT
FORMS OF
LINEAR FUNCTIONS

Slope Intercept form: $y = mx + b$

Point-Slope form: $y - y_1 = m(x - x_1)$

Standard form: $Ax + By = C$

Steps to Graph:

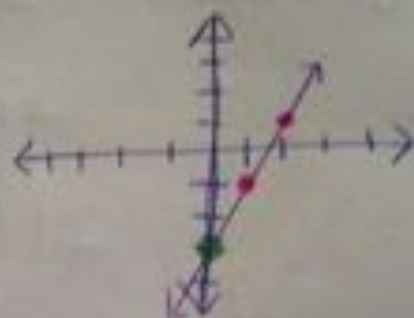
- * 1st Graph the y-intercept
- * Then, use the slope ($\frac{\text{Rise}}{\text{Run}}$) to find MORE points.

EX:

$$y = 2x - 3$$

$$m = \text{slope} = 2$$

$$b = \text{y-int} = -3$$



Recognizing Slope-Intercept Form:

- * y is by itself on 1 side of the = sign.
- * There are no parentheses.

Parts of the equation:

- * m (the coefficient of x) represents the slope of the line
- * b (the constant) the y-intercept of the line

Slope Intercept form: $y = mx + b$

Point-Slope form: $y - y_1 = m(x - x_1)$

Standard form: $Ax + By = C$

Steps to Graph:

* 1st graph the points (x_1, y_1)

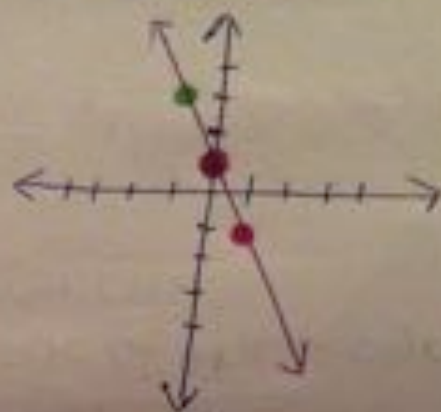
* Then, use the slope $\left(\frac{\text{Rise}}{\text{Run}}\right)$ to find more points.

Ex:

$$y - 3 = -2(x + 1)$$

$$\text{slope} = -2$$

$$\text{point} = (-1, +3)$$



Recognizing point slope form:

* x & y are on opposite sides of the equal sign

* Either x is in parenthesis or y is not by itself (or both)

Parts of the equation:

* m is the slope of the line

* (x_1, y_1) is a point on the line

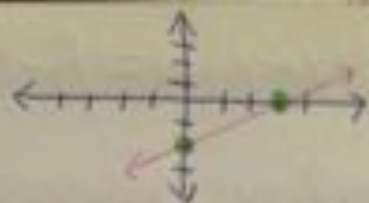
↖ Notice x_1 & y_1 have opposite signs in the equation vs the point.

$$\text{Point-Slope form: } y - y_1 = m(x - x_1)$$

$$\text{Standard form: } Ax + By = C$$

Example:

$$2x - 3y = 6$$



Option 1

$$\begin{aligned} 2x - 3y &= 6 \\ -2x & \quad -2x \\ \hline -3y &= -2x + 6 \\ \frac{-3y}{-3} &= \frac{-2x}{-3} + \frac{6}{-3} \\ \boxed{y} &= \frac{2}{3}x - 2 \end{aligned}$$

Option 2

x-intercept

$$\begin{aligned} 2x - 3(0) &= 6 \\ 2x &= 6 \\ \frac{2}{2} &= \frac{6}{2} \rightarrow (3, 0) \end{aligned}$$

y-intercept

$$\begin{aligned} 2(0) - 3y &= 6 \\ -3y &= 6 \\ \frac{-3y}{-3} &= \frac{6}{-3} \rightarrow (0, -2) \end{aligned}$$

Recognizing Standard form:

- * X & y are on the same side of the = sign
- * The coefficients by X & y are integers
- * There is a constant on the other side of the = sign.

Two options to graph:

- * Convert to slope intercept form
- * Find & graph the x- & y-intercepts
 - X-intercept (plug in 0 for y & solve)
 - y-intercept (plug in 0 for x & solve)

Standard form: $Ax + By = C$