

2-3 Slope-Intercept Form

$$y = m x + b$$

slope

*y-intercept
(when line crosses y-axis)*

Write an equation using
two points:

(1,2)(3,4)

Step 1:
Find the
slope

Step 1:

$$\begin{array}{l} (1,2) \quad (3,4) \\ x_1 \quad y_1 \quad x_2 \quad y_2 \\ \frac{y_2 - y_1}{x_2 - x_1} \\ \frac{4 - 2}{3 - 1} = \frac{2}{2} \\ m = 1 \end{array}$$

Step 2:
Find y-intercept

- slope
- (x, y)
- $y = mx + b$

Step 2:

$$\begin{array}{l} m = 1 \\ (1, 2) \\ y = mx + b \\ (2) = (1)(1) + b \\ 2 = 1 + b \\ \underline{-1 \quad -1} \\ 1 = b \end{array}$$

Step 3:
Re-write equation

- slope (m)
- y-intercept (b)
- $y = mx + b$

Step 3:

$$\begin{array}{l} m = 1 \\ b = 1 \\ y = mx + b \\ y = 1x + 1 \end{array}$$

* if slope
 $m = \frac{1}{2}$

$\begin{matrix} (5, 7) \\ x \quad y \end{matrix}$

$$7 = \left(\frac{1}{2}\right)(5) + b$$

$$7 = (.5)(5) + b$$

$$7 = 2.5 + b$$

$$\begin{array}{r} -2.5 \quad -2.5 \\ \hline \end{array}$$

$$\boxed{4.5 = b}$$

1. $(3,2)(6,5)$

2. $(0,0)(4,2)$

3. $(2,-1)(-1,-1)$

4. $(1,1)(4,3)$

Graphing Slope intercept

$$y = 2x - 1$$
$$y = mx + b$$

① Identify the y-intercept.
plot point 1st

② Use the slope $\left(\frac{\text{rise}}{\text{run}}\right)$ to graph 2-3 more points

①

$$b = -1$$

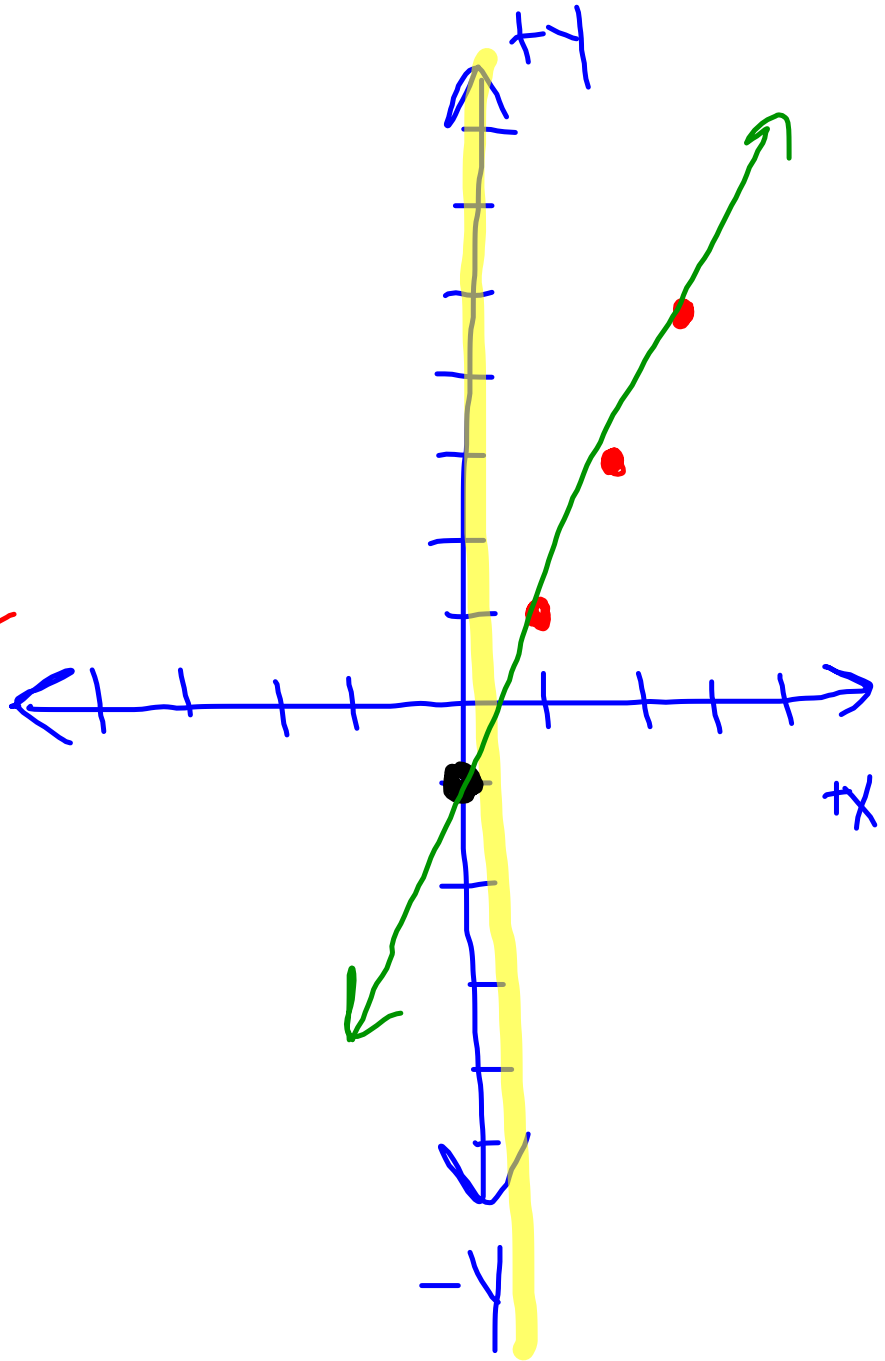
②

2 rise

1 run

run 1st

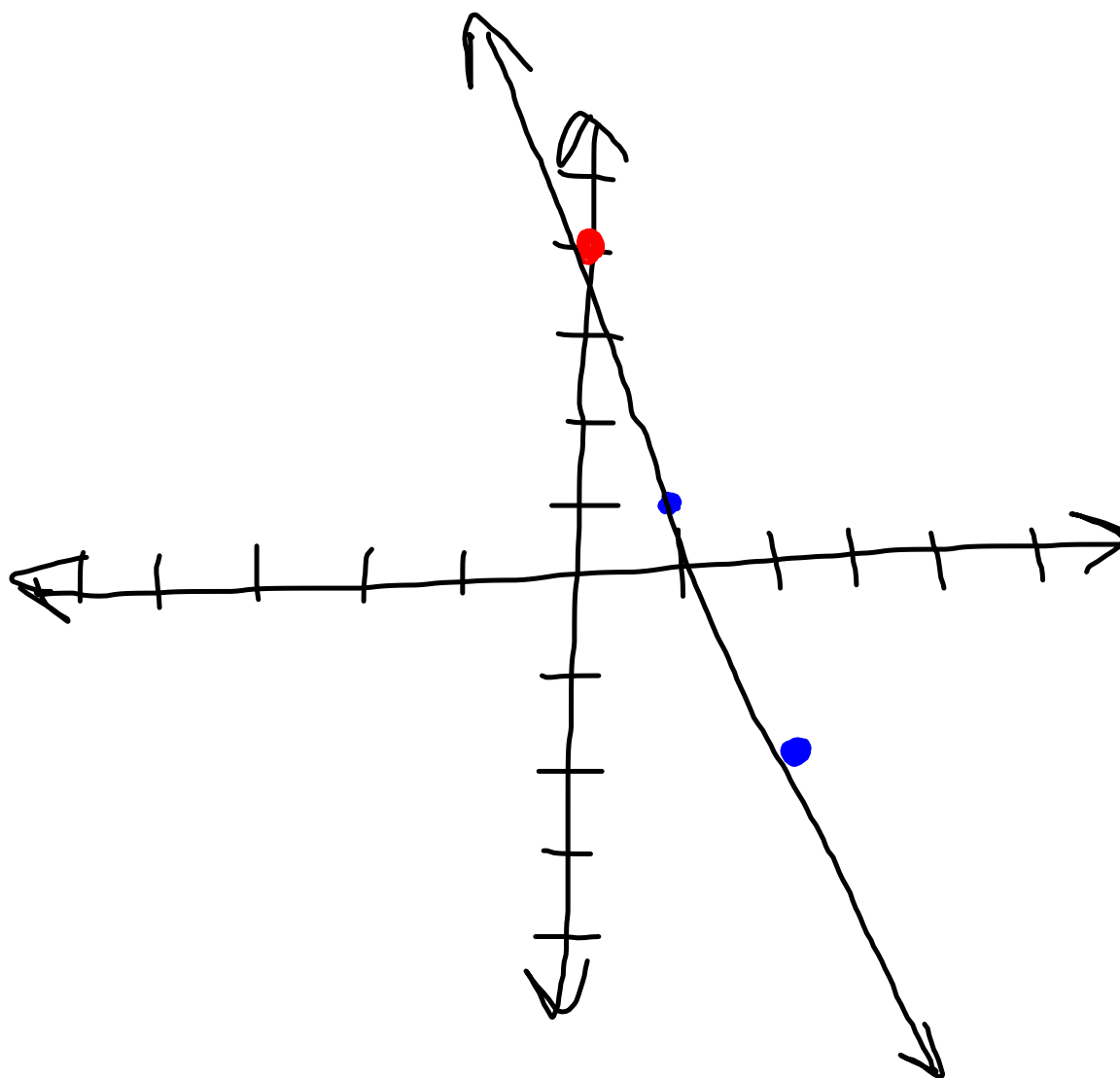
rise 2nd



$$y = -3x + 4$$

① $b = 4$

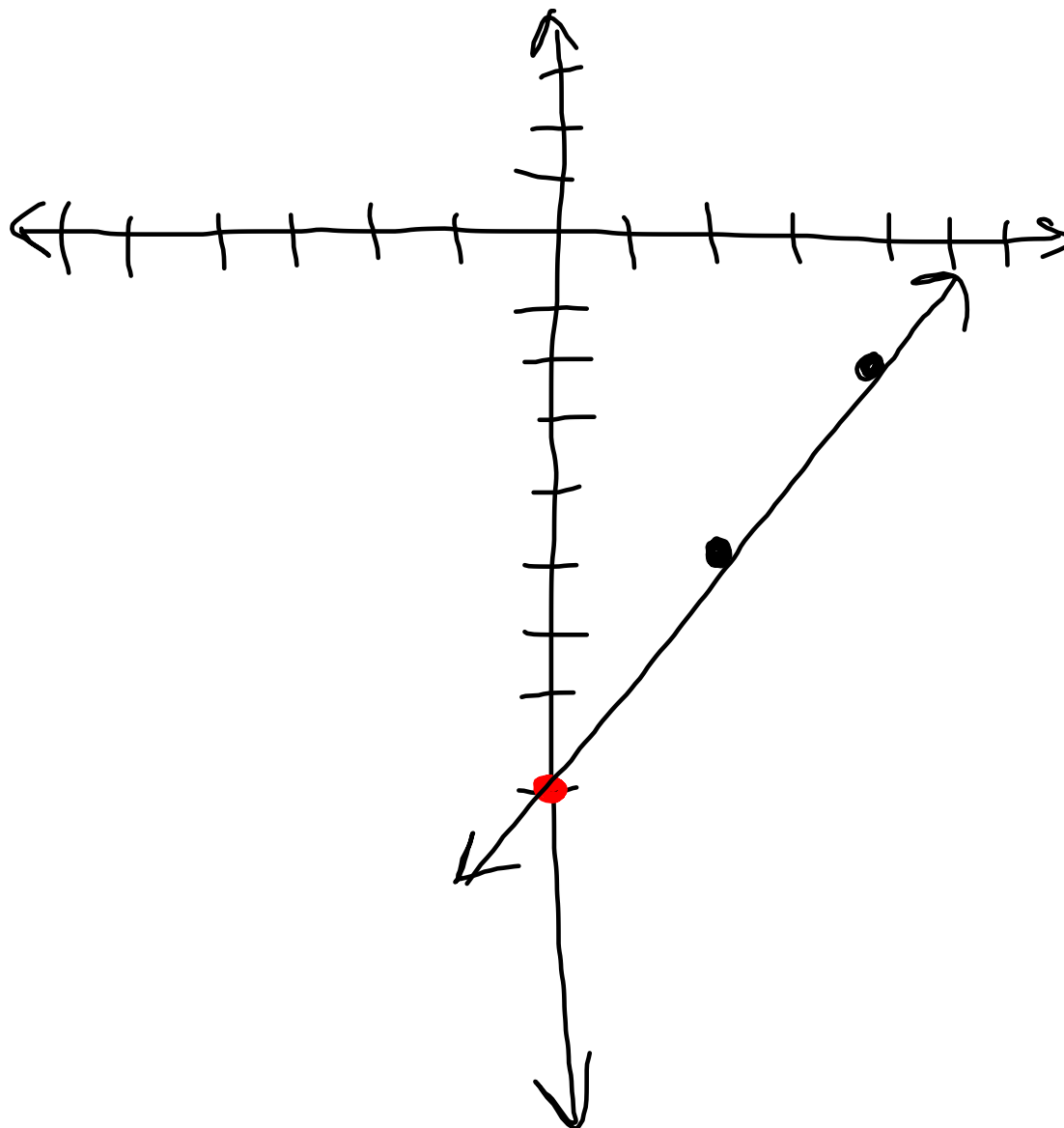
② $-\frac{3}{1}$ $\frac{\text{rise}}{\text{run}}$

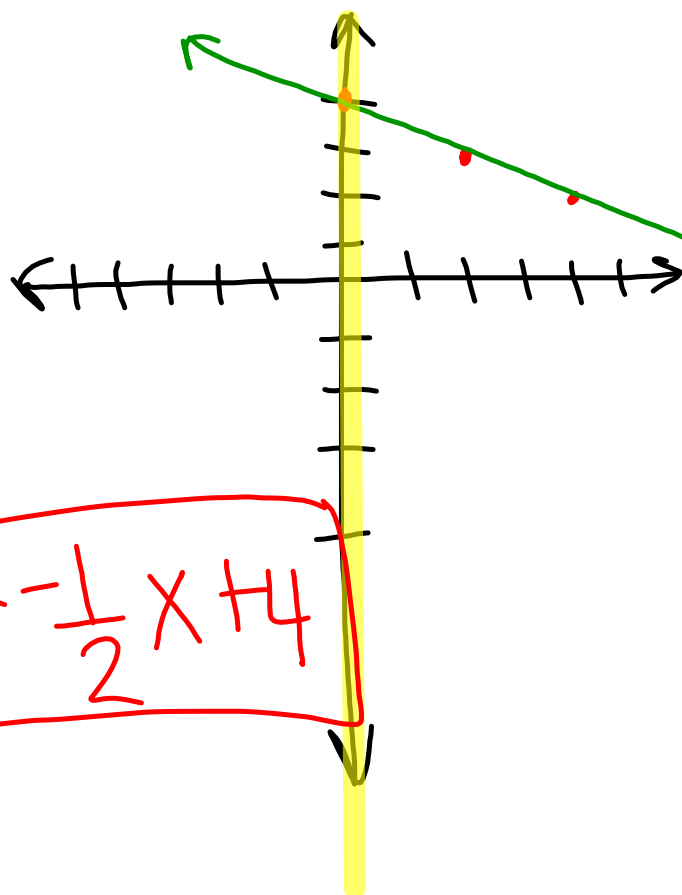


$$y = \frac{3}{2}x - 8$$

$$m = \frac{3}{2} \begin{array}{l} \text{rise} \\ \text{run} \end{array}$$

$$b = -8 \begin{array}{l} \text{Graph} \\ \text{1st} \\ \text{y-axis} \end{array}$$





① Find y
intercept

$$b = 4$$

② Find the
slope using
a point

$$m = -\frac{1}{2}$$