

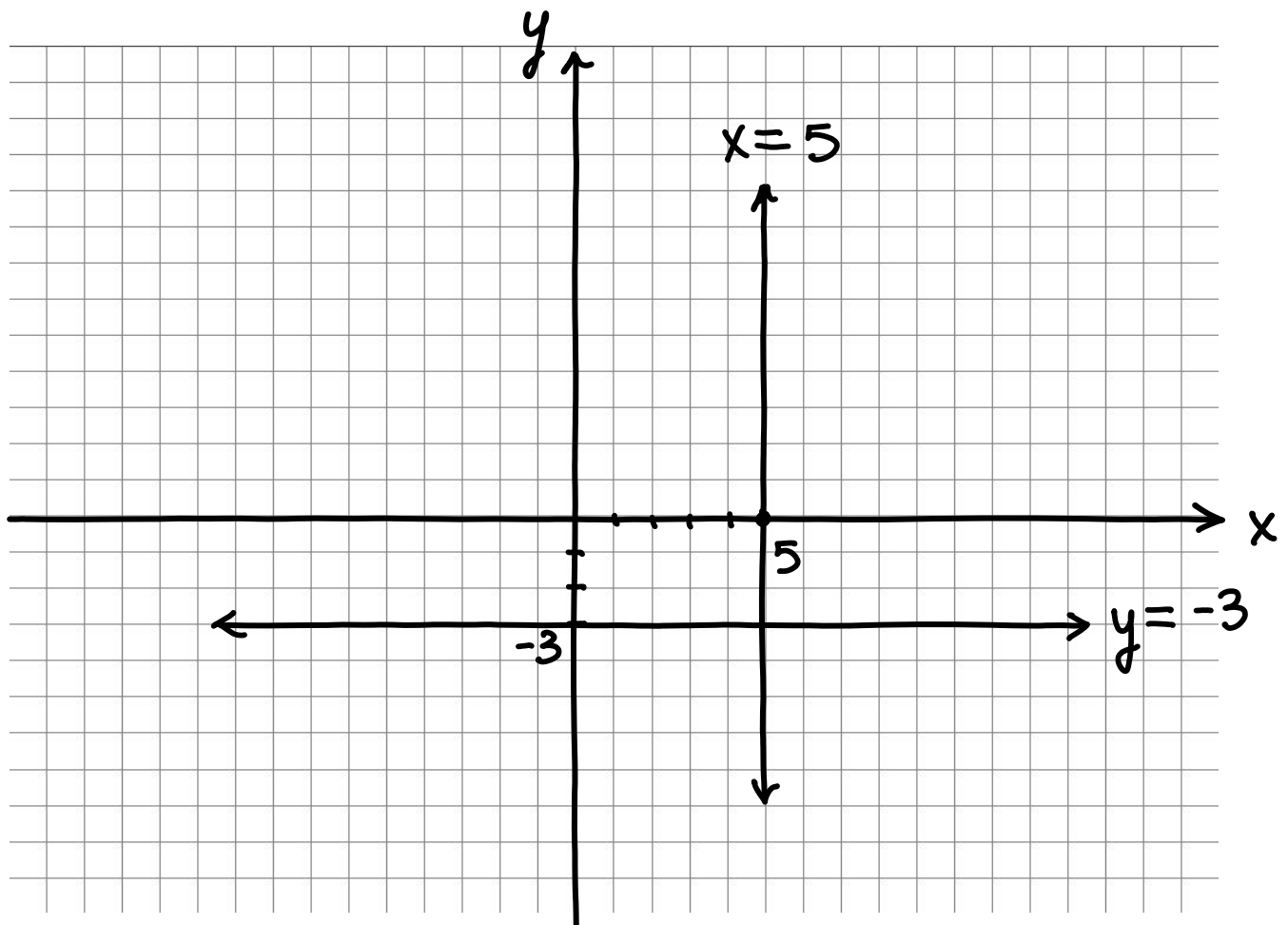


Graphing Lines with One Variable

$$x = 5$$

$$y = -3$$

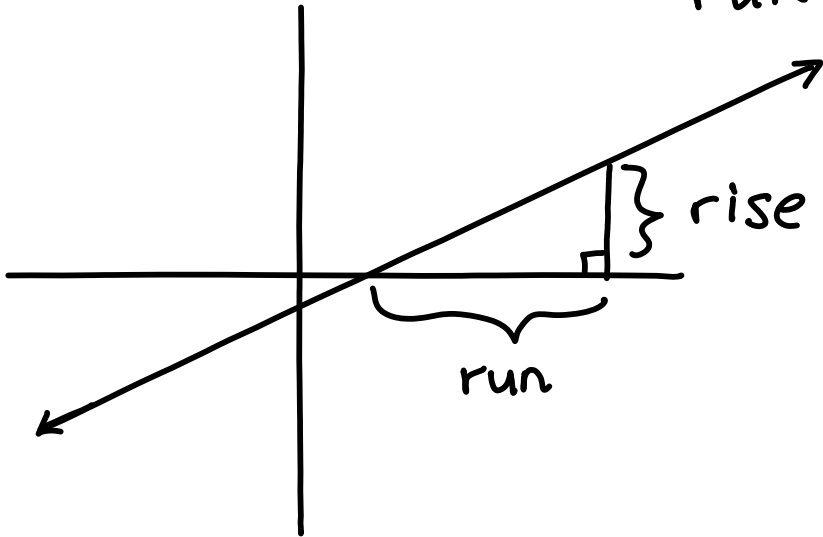
$x = \text{number}$, vertical line
 $y = \text{number}$, horizontal line





Slope of a Line

Defined as $m(\text{slope}) = \frac{\text{rise}}{\text{run}}$



Slope formula = $m = \frac{y_1 - y_2}{x_1 - x_2}$

$$\begin{array}{cccc} x_1 & y_1 & x_2 & y_2 \\ \downarrow & \downarrow & \downarrow & \downarrow \\ (1, 6) & & (2, 3) & \end{array} \quad \frac{y_1 - y_2}{x_1 - x_2}$$

$(1, 6), (2, 3)$ ← these points are on the line

$$m = \frac{6 - 3}{1 - 2} = \frac{3}{-1} = -3$$

slope = -3



Graphing Lines with Two Variables

Three methods

1. Construct a table
2. $y = mx + b$ slope-intercept method
3. X and Y Intercept Method

Graphing a line using a table

1. Construct a table by plugging in a x-value into the equation
2. Next solve for y
3. The x-value and y solution are a point on the line (x, y)

Example, graph $y + 2x = 6$

$$y + 2x = 6$$

plug-in 1, then solve for y

$$\begin{aligned}y + 2(1) &= 6 \\y + 2 &= 6 \\y &= 4\end{aligned}$$

the point (1, 4) is on the line, try another x-value, $x = 5$

x	y
1	4
5	

$$y + 2x = 6$$

$$y + 2(5) = 6$$

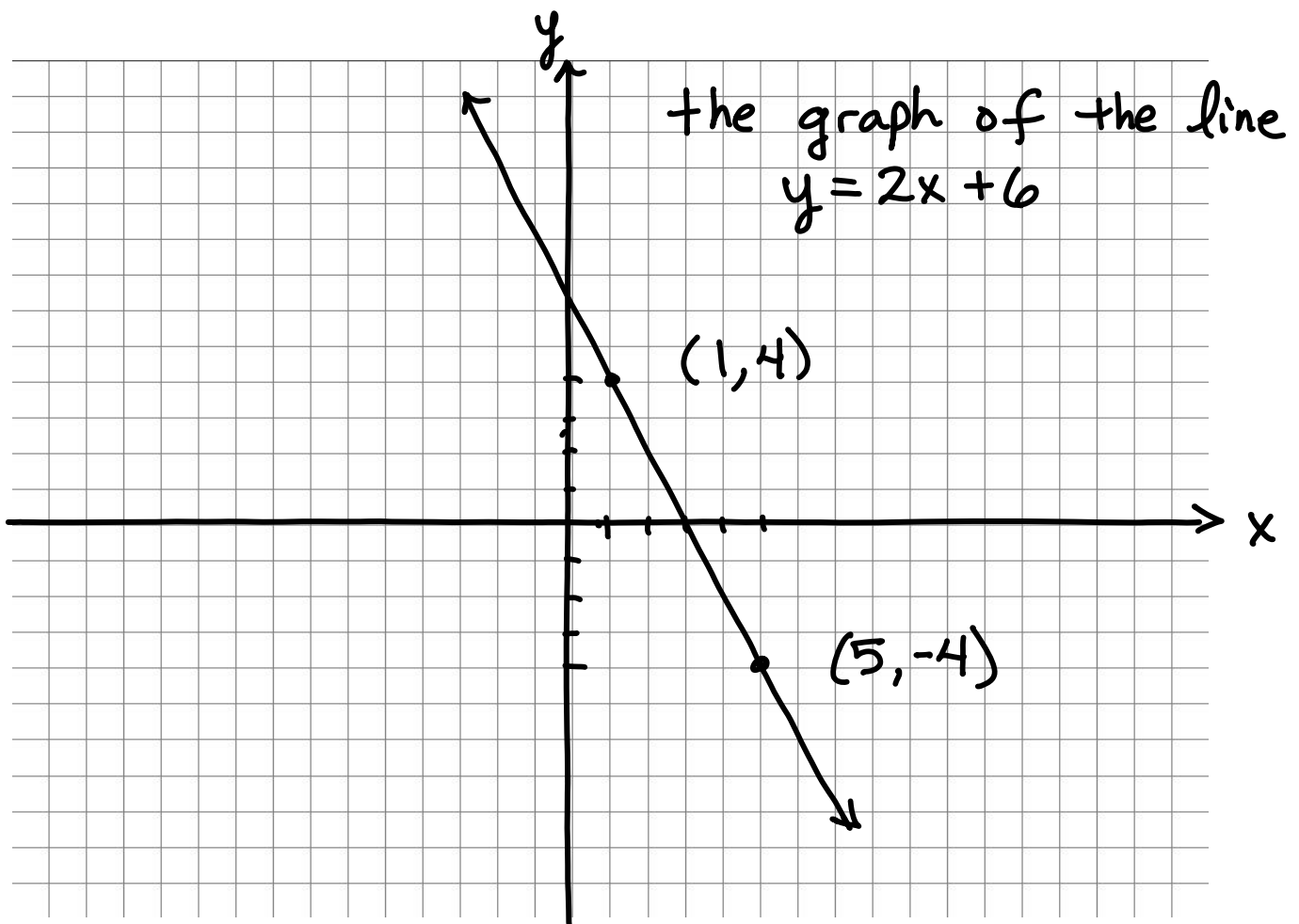
$$y + 10 = 6$$

$$y = -4$$

x	y
1	4
5	-4

the point $(5, -4)$ is
also on the line

plot the two points and draw the line



Graphing lines using $y = mx + b$

Next use the slope to find a second point on the line

↑
first plot b , this is the y -intercept (one point on line)

Graph $y = \frac{2}{3}x + 2$

↑ point A

↑ use slope to get point B

