

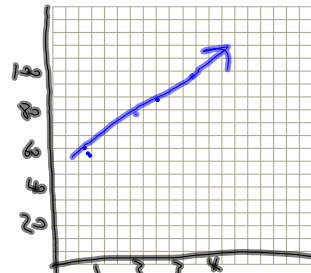
# 1.1- Tables and Graphs of Linear Equations

A Water tank already contains 55 gallons of water when Sarah begins to fill it. Water flows into the tank at a rate of 9 gallons per minute.

a) Make a table for the volume of water in the tank after 1, 2, 3, and 4 minutes

Minutes	Volume
1	64
2	73
3	82
4	91

b) Graph the points represented by your table and connect them.



c) Write a linear equation to model this situation Total Amount = variable amount + fixed amount

$$T = 9M + 55$$

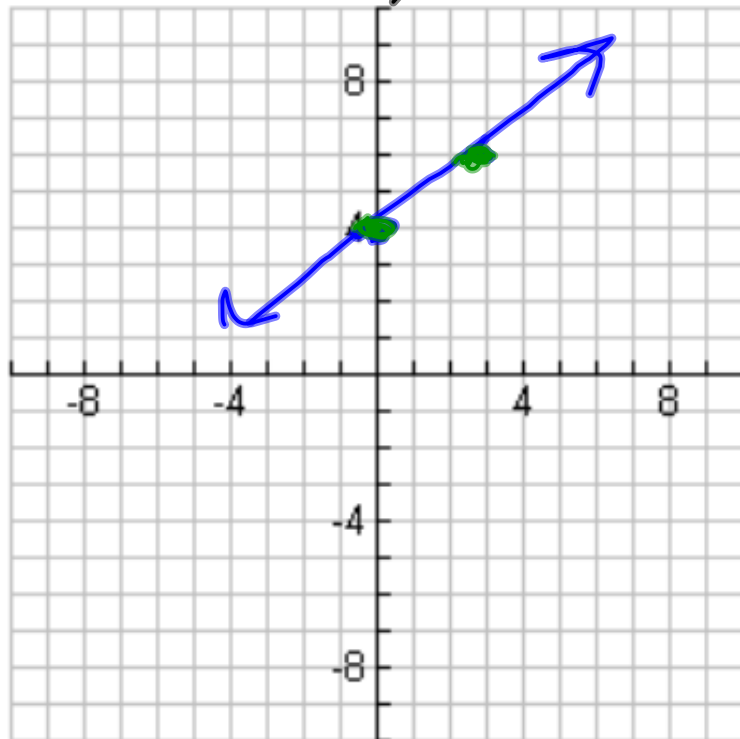
d) Find the volume of water in the tank 20 minutes after Sarah begins filling the tank

$$T = 9(20) + 55$$

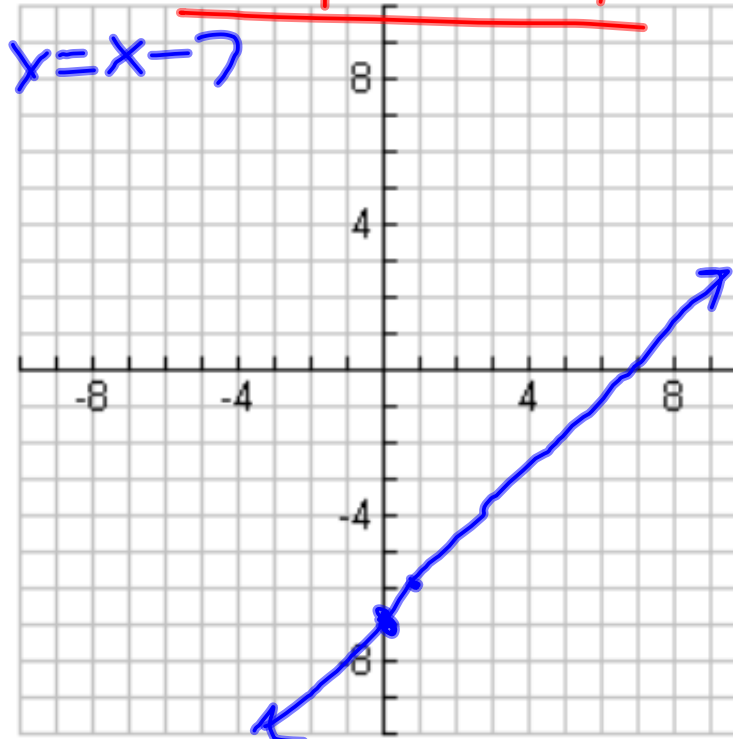
$$T = 180 + 55$$

$$T = 235 \text{ gallons}$$

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



$$y + 4 = x - 3$$



X	Y
0	4
3	6

# 1.2- Slopes and Intercepts

## Slope of a Line

If points  $(x_1, y_1)$  and  $(x_2, y_2)$  lie on a line, then the slope,  $m$ , of the line is given by the ratio below.

$$m = \frac{\text{change in } y}{\text{corresponding change in } x} = \frac{\text{Rise}}{\text{Run}} = \frac{y_2 - y_1}{x_2 - x_1}$$

Find the slope of the line containing the points  $(-5, 3)$  and  $(3, -4)$

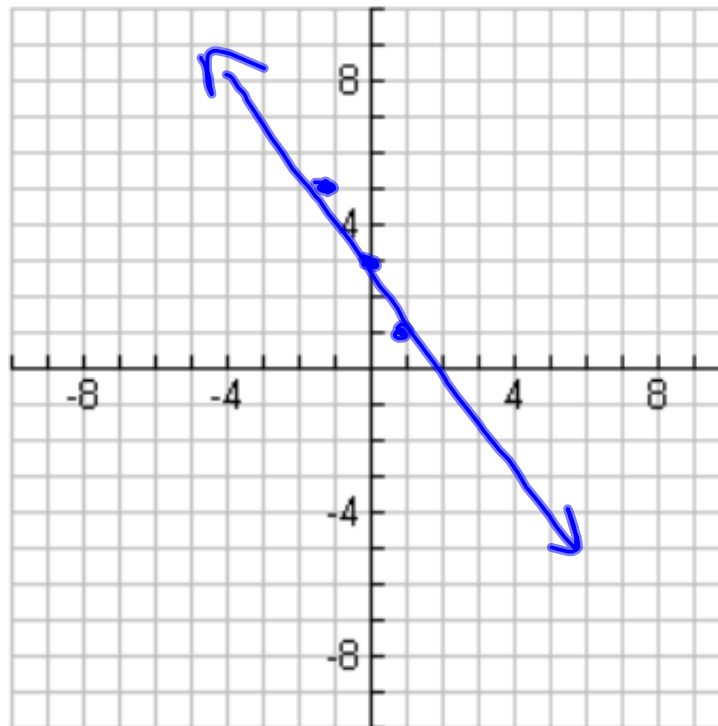
$$m = \frac{-4 - 3}{3 - (-5)} = \frac{-7}{8}$$

## Slope-intercept Form

The **slope-intercept form** of a line is  $y = mx + b$ , where  $m$  is the slope and  $b$  is the y-intercept.

Use the slope and y-intercept to graph the equation  $2x + y = 3$ .

$$\begin{array}{r} -2x \quad -2x \\ \hline y = -2x + 3 \end{array}$$



Write the equation, in slope-intercept form, for the line that passes through (1, 4) and has a y-intercept of 3.

$$y = mx + b$$
$$4 = m(1) + 3$$
$$\begin{array}{r} -3 \\ \hline 1 = m \end{array}$$
$$y = x + 3$$

$$(1, 4) (0, 3)$$
$$m = \frac{4-3}{1-0} = \frac{1}{1} = 1$$

$$y = x + 3$$

### Standard Form

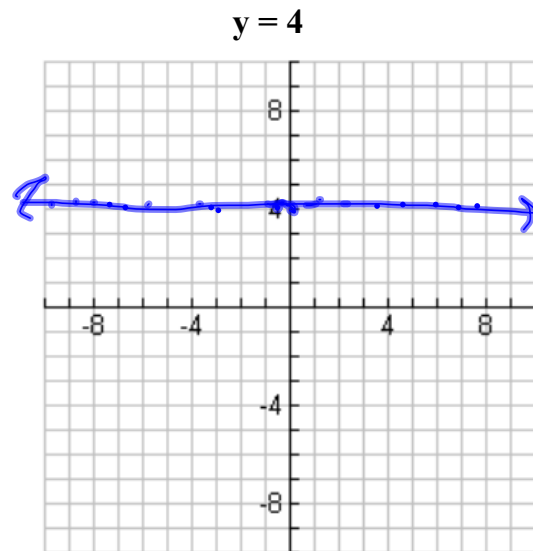
The **Standard form** of a linear equation is  $Ax + By = C$ , where  $A$ ,  $B$ , and  $C$  are real numbers and  $A$  and  $B$  are not *both* 0.

### How to find intercepts

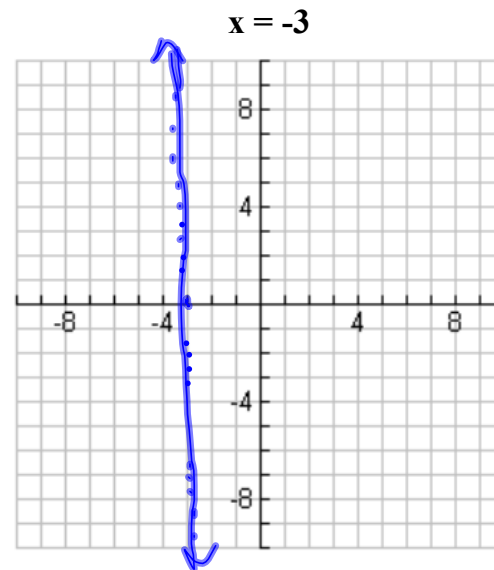
y-intercept- set  $x = 0$

x-intercept- set  $y = 0$

### 0 slope and undefined slope



0 slope



und. slope

# Homework

Pg. 10 #52, 54

Pg. 17-20 #17, 18, 25, 26, 34, 35, 38, 39, 50, 51, 62, 63, 68, 69

$$52) a) T = 67 - 4h$$

$$b) 32 = 67 - 4h$$

$$\begin{array}{r} -67 \quad -67 \\ \hline \end{array}$$

$$\begin{array}{r} -35 = -4h \\ \hline \end{array}$$

$$\begin{array}{r} -4 \quad -4 \\ \hline \end{array}$$

$$8.75 = h$$

8 hours 45 min.

$$54) a) C = 40(2.50) + 200 \\ = 100 + 200 = \$300$$

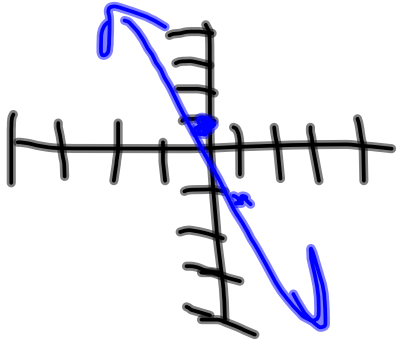
$$b) \begin{array}{r} 500 = B(2.50) + 200 \\ - 200 \phantom{=} \phantom{=} - 200 \\ \hline 300 = B(2.50) \\ \hline 2.50 \phantom{=} \phantom{=} 2.50 \\ \hline \end{array}$$

$$120 = B$$

$$34) \begin{array}{r} 2x + y = 1 \\ \underline{-2x \quad -2x} \\ y = -2x + 1 \end{array}$$

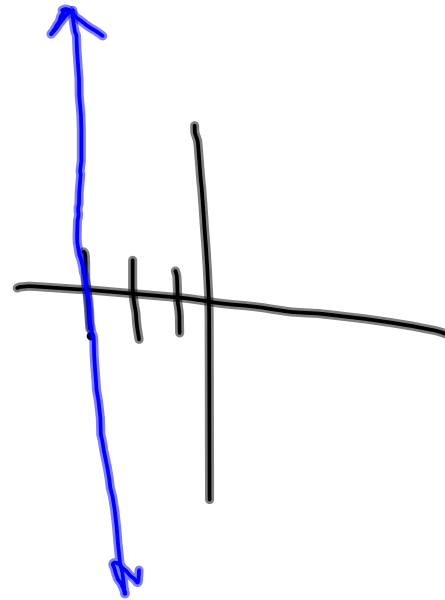
$$m = -2$$

$$b = 1$$



$$35) x = -3$$

$m = \text{undefined}$



$$38) m = \frac{-2}{4} = -\frac{1}{2}$$

$$b = 4$$

$$y = -\frac{1}{2}x + 4$$

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$$39) m = -\frac{6}{2} = -3$$

$$b = 2$$

$$y = -3x + 2$$

$$50) \quad 5x - 8y = 16$$

x	y
0	-2
$\frac{16}{5}$	0

