

Homework Review: 4.3

(415)

.04 = small bottles

.08 = large

.56 = total

$$4x + 8y = 56$$

$$4(0) + 8y = 56$$

$$\frac{8y}{8} = \frac{56}{8}$$

$$x=0, y=7$$

$$(0, 7)$$

$$32 + 24 =$$

$$(56)$$

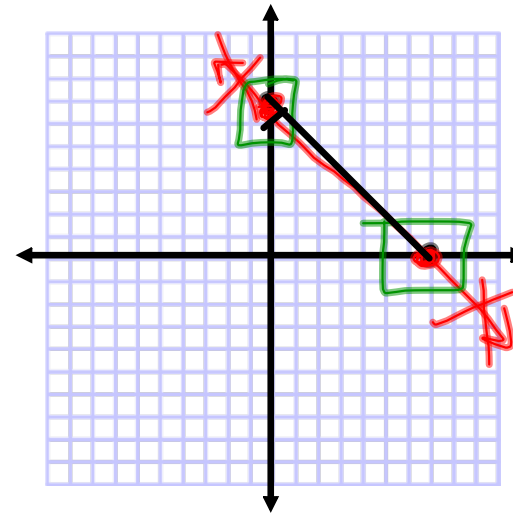
$$4x + 8(0) = 56$$

$$\frac{4x}{4} = \frac{56}{4}$$

$$x = 14, y = 0$$

$$(14, 0)$$

7 large
14 small
8 small
&
3 large



Slope:

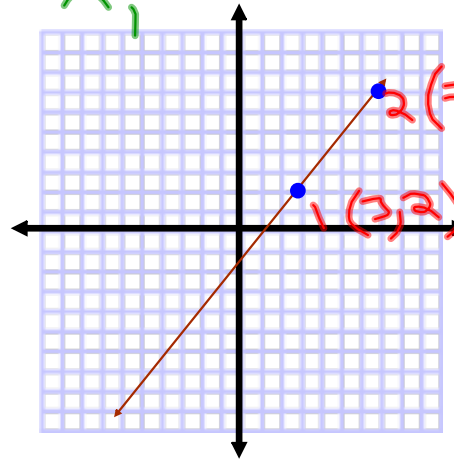
The "angle" of a line on a graph

Definition

$$\begin{matrix} (x_1, y_1) \\ (x_2, y_2) \end{matrix} \quad m = \frac{y_2 - y_1}{x_2 - x_1}$$

Mathematical formula

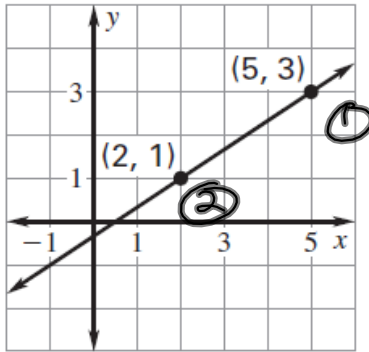
$$\begin{aligned} \textcircled{1} (3, 2) & \quad m = \frac{7-2}{7-3} \\ \textcircled{2} (7, 7) & \quad \boxed{m = \frac{5}{4}} \end{aligned}$$



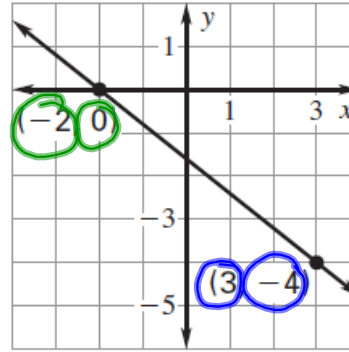
Example:

Find the slope of the line that passes through the points.

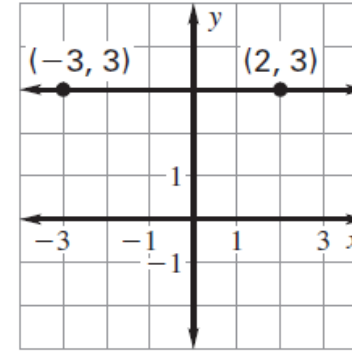
10.



11.



12.



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

$$= \frac{1 - 3}{2 - 5}$$

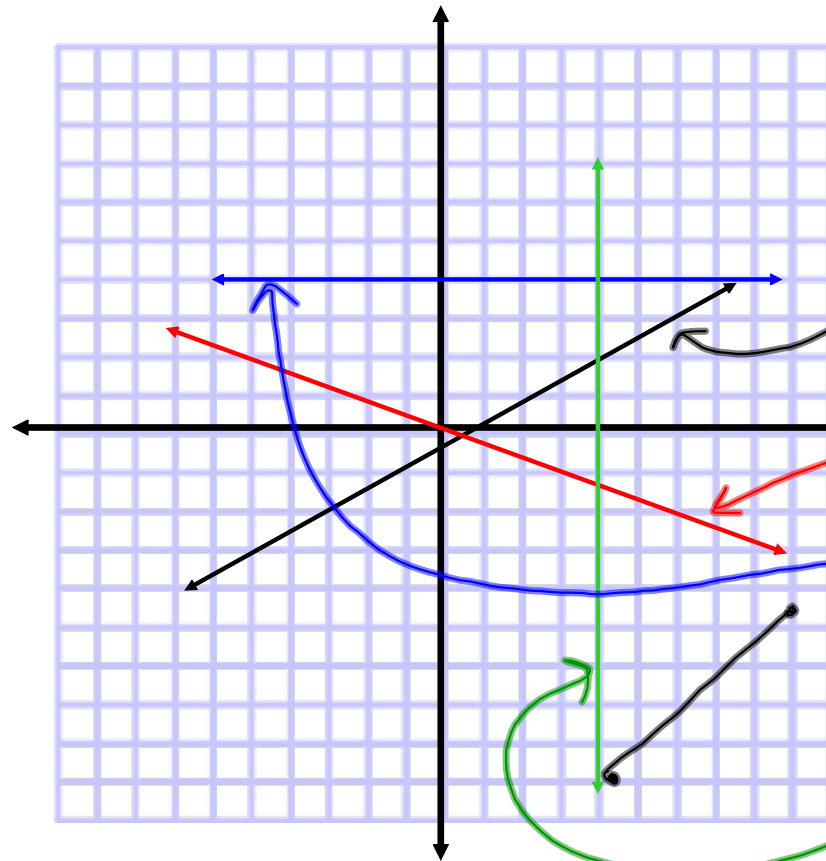
$$= \frac{-2}{-3} = \frac{2}{3}$$

$$\frac{-4 - 0}{3 - (-2)} = \frac{-4}{5}$$

$$\frac{(-3, 3) - (2, 3)}{-3 - 2} = \frac{3 - 3}{-5} = \frac{0}{-5} = 0$$

Classification of slopes:

$$\text{slope} = \frac{\text{rise}}{\text{run}} \quad \begin{array}{c} \uparrow \\ \rightarrow \end{array}$$



Positive

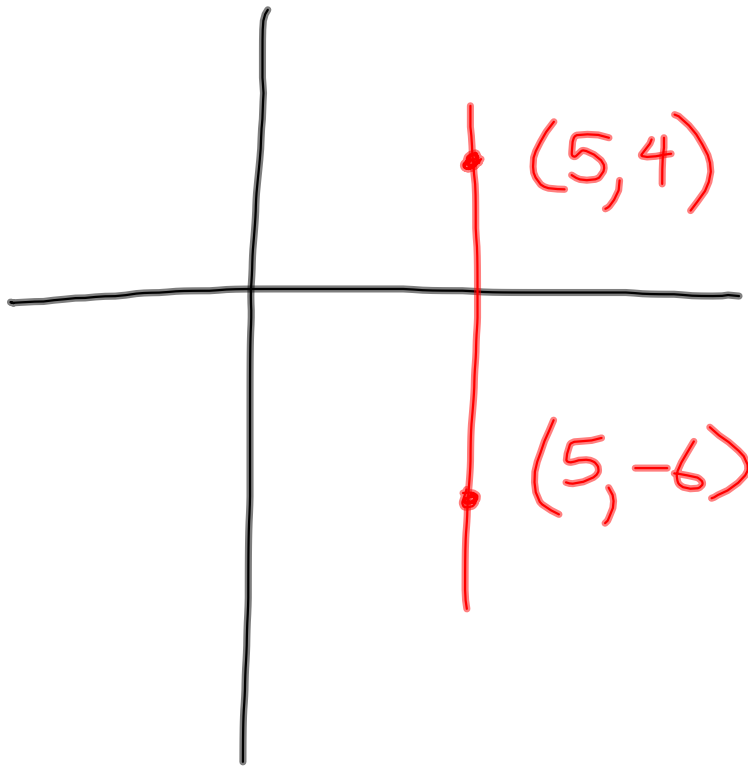
$$\frac{\begin{array}{c} \uparrow + \\ \rightarrow + \end{array}}$$

Negative

$$\frac{\begin{array}{c} \downarrow - \\ \rightarrow + \end{array}}{\text{or}} \frac{\begin{array}{c} \uparrow + \\ \leftarrow - \end{array}}$$

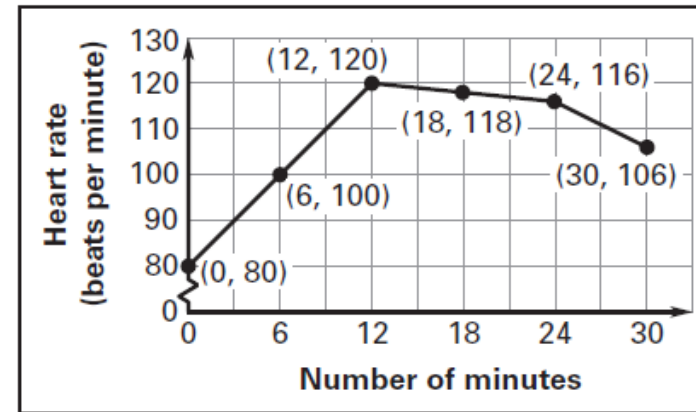
Horizontal = 0

Vertical = Undefined



$$\begin{aligned} m &= \frac{y_2 - y_1}{x_2 - x_1} \\ &= \frac{-6 - 4}{5 - 5} \\ &= \frac{-10}{0} = \text{undefined} \end{aligned}$$

Heart Rate The graph shows the heart rate of a person during 30 minutes of exercise. Give a verbal description of the workout.



First 12 mins:

heart rate increased

Next 12 mins:

heart rate ~ same

Last 6 mins:

heart rate declined

Finding an unknown coordinate

① ②

$$(-3, y_1), (-9, -2); m = 1$$

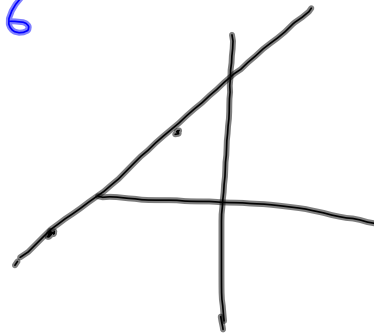
$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

Set up the equation

$$-6 \cdot 1 = \frac{-2 - y_1}{-9 + 3} = \frac{-2 - y_1}{-6} \quad \text{Solve for the missing variable}$$

$$\begin{array}{rcl} -6 & = & -2 - y_1 \\ +2 & +2 & \end{array}$$

$$\begin{array}{rcl} (-1) - 4 & = & -y_1 \quad (-1) \\ 4 & = & y_1 \end{array}$$



Find the slope of the line that passes through the points.

16. $(1, 2)$ and $(7, 7)$

17. $(3, 4)$ and $(-5, 0)$

18. $(5, -2)$ and $(5, 8)$

Find the value of x or y so that the line passing through the two points has the given slope.

28. $(x, -7), (1, 2); m = 3$

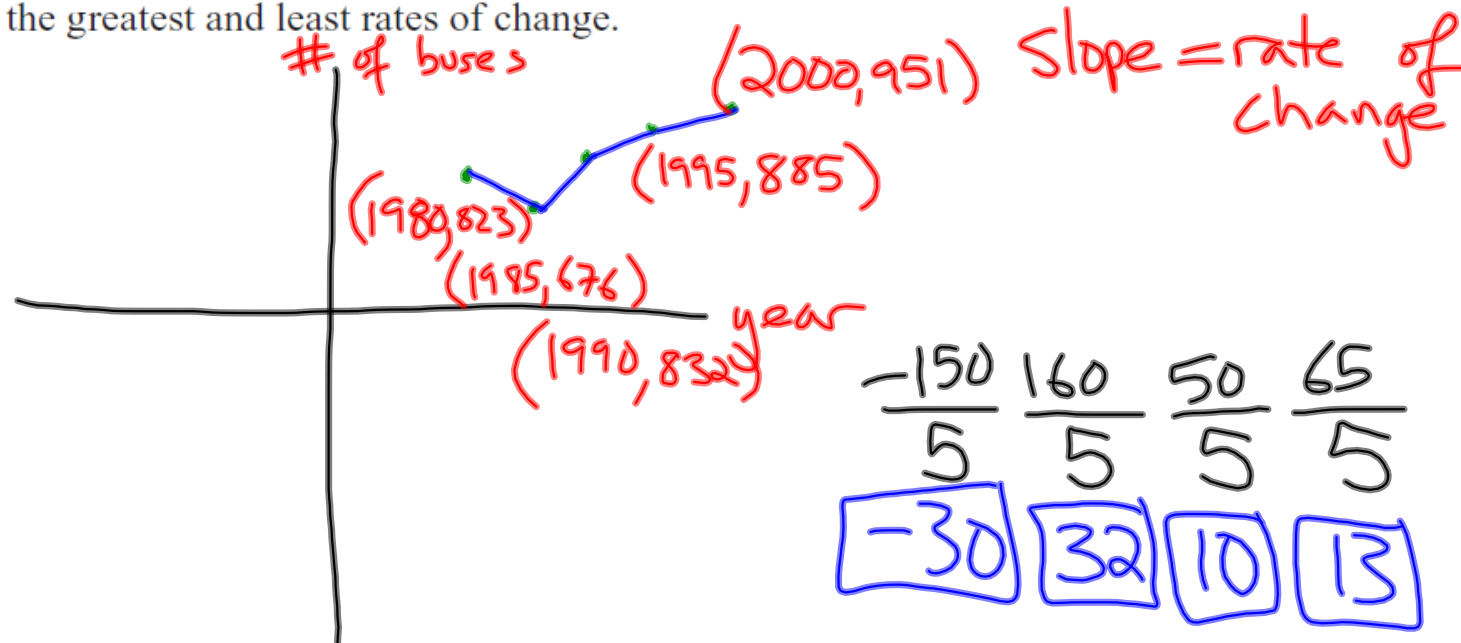
29. $(9, y), (3, 2); m = \frac{2}{3}$

30. $(7, 5), (x, 2); m = \frac{3}{4}$

Trolley Bus The table shows the number of trolley buses in operation in the United States during certain years.

Year	1980	1985	1990	1995	2000
Number of buses	823	676	832	885	951

- a. Describe the rates of change in the number of buses during the time period.
- b. Determine the time intervals during which the number of trolley buses showed the greatest and least rates of change.



Homework:

p. 239; 4-11, 19, 24, 36