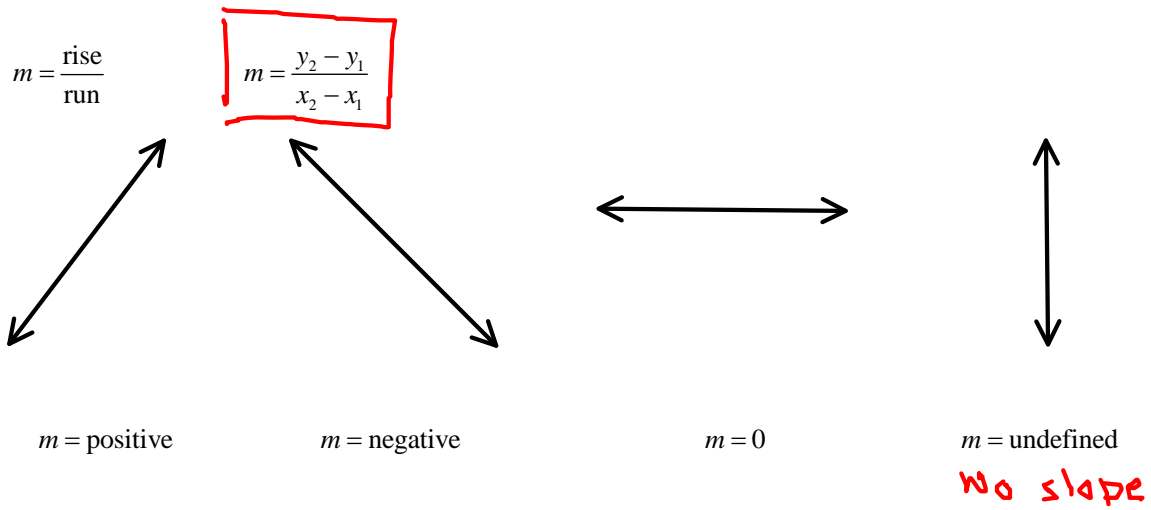
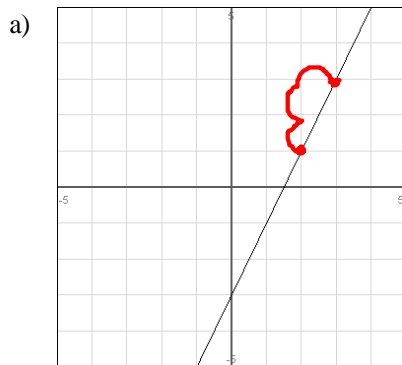


Slope

Slope - the ratio of the vertical rise to the horizontal run

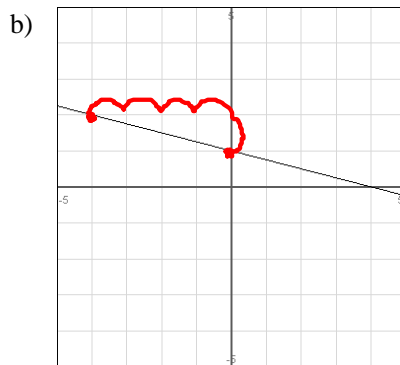


1. Find the slope of each line. $m = \frac{\text{rise}}{\text{run}}$



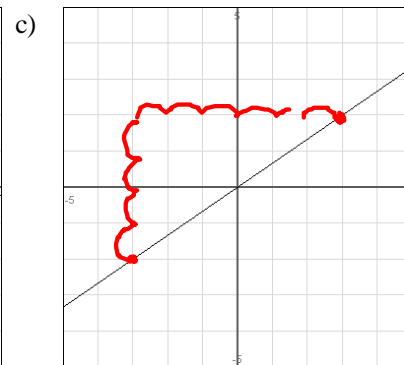
$m = \text{positive}$

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



$m = \text{negative}$

$$m = -\frac{1}{4}$$



$m = \text{positive}$

$$m = \frac{4}{6} \div 2 = \boxed{\frac{2}{3}}$$

2. Find the coordinates of two points on the line with the given equation. Then use the points to find the slope of the line.

a) $y = -2x - 4$

$$\begin{aligned}x &= 0 \\y &= -2(0) - 4 \\y &= 0 - 4 \\y &= -4 \\x_1 \quad y_1 \\(0, -4)\end{aligned}$$

$$\begin{aligned}x &= 1 \\y &= -2(1) - 4 \\y &= -2 - 4 \\y &= -6 \\x_2 \quad y_2 \\(1, -6)\end{aligned}$$

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

$$m = \frac{-6 - (+4)}{1 - 0}$$

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

$$\boxed{m = -2}$$

b) $3x + 4y = 12$

$$\begin{aligned}x &= 0 \\3(0) + 4y &= 12 \\0 + 4y &= 12 \\4y &= 12 \\ \frac{4y}{4} &= \frac{12}{4} \\y &= 3 \\x_1 \quad y_1 \\(0, 3)\end{aligned}$$

$$\begin{aligned}y &= 0 \\3x + 4(0) &= 12 \\3x + 0 &= 12 \\ \frac{3x}{3} &= \frac{12}{3} \\x &= 4 \\x_2 \quad y_2 \\(4, 0)\end{aligned}$$

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

$$m = \frac{0 - 3}{4 - 0}$$

$$\boxed{m = \frac{-3}{4}}$$

3. Find the slope of each line with the given rise and run.

a) rise = -4, run = 20

$$m = \frac{\text{rise}}{\text{run}}$$

$$m = \frac{-4}{20} \div 4 = \boxed{\frac{-1}{5}}$$

b) rise = .5, run = 8

$$m = \frac{.5}{80} = \frac{5}{80} \div 5 = \boxed{\frac{1}{16}}$$

4. Find the slope of the line that contains each pair of points.

x_1, y_1, x_2, y_2

a) (-8, 4), (2, -18)

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-18 - 4}{2 - (-8)}$$

$$m = \frac{-22}{10} \div 2 = \boxed{\frac{-11}{5}}$$

x_1, y_1, x_2, y_2

b) (-2, 1), (6, 15)

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{15 - 1}{6 - (-2)}$$

$$m = \frac{14}{8} \div 2 = \boxed{\frac{7}{4}}$$

$$\begin{array}{c} x_1, y_1, x_2, y_2 \\ \text{c) } (5, -4), (2, -4) \end{array}$$

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-4 - (-4)}{2 - 5}$$

$$m = \frac{0}{-3} = \boxed{0}$$

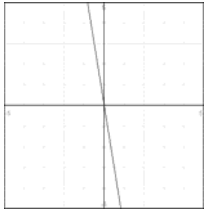
$$\begin{array}{c} x_1, y_1, x_2, y_2 \\ \text{d) } (7, -1), (7, 2) \end{array}$$

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{2 - (-1)}{7 - 7}$$

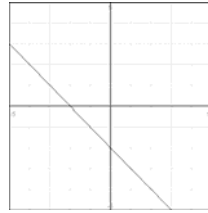
$$m = \frac{3}{0} = \boxed{\text{undefined}}$$

5. Match the graph with the correct slope.

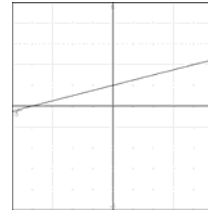
- ~~a) $m = 3$~~
- ~~b) $m = \frac{1}{4}$~~
- ~~c) $m = -6$~~
- ~~d) $m = 0$~~
- ~~e) $m = \text{undefined}$~~
- ~~f) $m = -1$~~



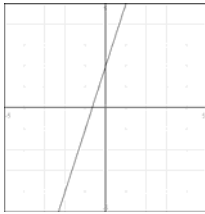
* C



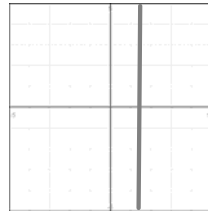
* F



* B



* A



E



D

6. Find the missing coordinate so that the slope of the line between the points $(3, 4)$ and $(x, -8)$ is $-\frac{1}{2}$.

x_1, y_1, x_2, y_2, m

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

$(3, 4) (27, -8)$

$$-\frac{1}{2} = \frac{-8 - 4}{x - 3}$$

$$\boxed{x = 27}$$

$$\frac{-1}{2} = \frac{-12}{x - 3}$$

$$\begin{aligned} -1(x - 3) &= -24 \\ -1x + 3 &= -24 \\ +3 & \quad -3 \end{aligned}$$

$$-24 + 3 = -27$$

$$\begin{aligned} \frac{-1x}{-1} &= \frac{-27}{-1} \\ \boxed{x = 27} \end{aligned}$$