March 03, 2016

Finding the Slope of a Line

*We can find the slope of a line many ways:

1. When Given an Equation

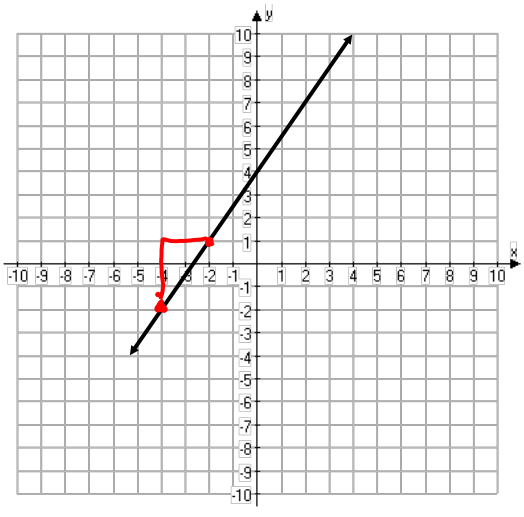
$y = 3x - 1$ $\quad m = 3$

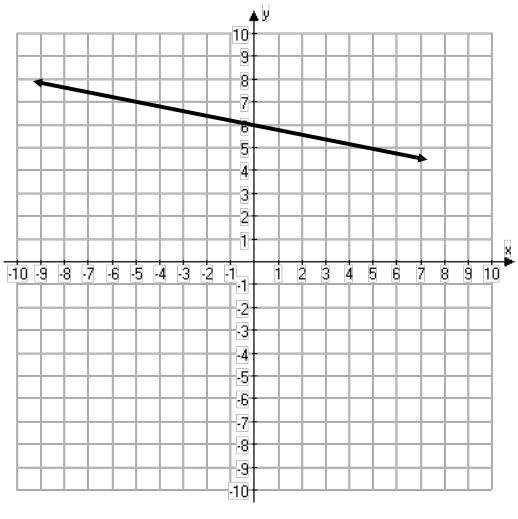
$y = \frac{-1}{2}x + 5$ $\quad m = -\frac{1}{2}$

2. When Given a Graph

-find two points and do $\frac{\text{rise}}{\text{run}}$

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





3. When Given Two Points

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

Which means... $(2, 3)$ $(6, 7)$ (y_1 y_1, x_2 y_2)

$$m = \frac{\text{2nd Y value subtract 1st Y value}}{\text{2nd X value subtract 1st X value}}$$

Steps:
1. Label the points
2. Sub values into equation
3. Simplify

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$
$$= \frac{7 - 3}{6 - 2}$$
$$= \frac{4}{4}$$
$$m = 1$$

Ex.1. Find the slope of the line that goes through the points (1, 3) and (6, 9).

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

$x_1\ y_1 \quad x_2\ y_2$

$x_2\ y_2 \quad x_1\ y_1$

$= \frac{9-3}{6-1}$ $\quad = \frac{3-9}{1-6}$ $\quad \frac{6}{9} \div \frac{3}{3} = \frac{2}{3}$

$m = \frac{6}{5}$ $\quad = \frac{-6}{-5} \div \frac{-1}{-1} = \frac{6}{5}$

Ex. 2. Find the slope of the line passing through the given points.

a. $(6, -10)$ and $(-15, 15)$

$x_1\ y_1 \quad x_2\ y_2$

$m = \frac{y_2 - y_1}{x_2 - x_1}$ $\quad = \frac{25}{-21}$

$= \frac{15 + (10)}{-15 - 6}$ $\quad = -\frac{25}{21}$ or $\frac{-25}{21}$

b. $(6, -12)$ and $(-15, -3)$

$x_1\ y_1 \quad x_2\ y_2$

$m = \frac{y_2 - y_1}{x_2 - x_1}$ $\quad = \frac{-9}{21} \div \frac{3}{3}$

$= \frac{-3 + (12)}{-15 - 6}$ $\quad = \frac{-3}{7}$

$= \frac{9}{-21}$

Homework:

Handout: Finding Slope from 2 Points

Page 1: #1, 2, 3, 4, 7, 8

Page 2: all

Answers:

#1. $-\frac{1}{26}$

#2. -4

#3. $\frac{11}{2}$

#4. $-\frac{8}{11}$

#7. $\frac{15}{14}$

#8. $-\frac{2}{5}$

Bring textbook to class tomorrow!