

4-1 Introducing Slope

Objective: I can use the word slope in the correct mathematical context.

I can determine whether a line has a positive, negative, 0 or undefined slope.

Tools needed: Ruler, Calculator

Vocabulary

Slope: COMMON difference, $\frac{\text{change in } y}{\text{change in } x} = \frac{\text{vertical}}{\text{horizontal}}$

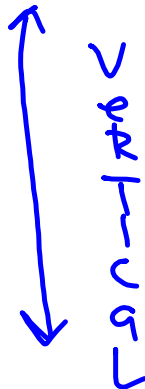


Rate of Change: SLOPE

Zero slope:



Undefined Slope:



-5, -3, -1, 1, ...

Common Difference: 2

$$a_n = d(n-1) + f$$

Explicit Equation:

$$a_n = 2(n-1) - 5$$

Another name for common difference is

slope.

Another name for Explicit is slope intercept form: $y = mx + b$

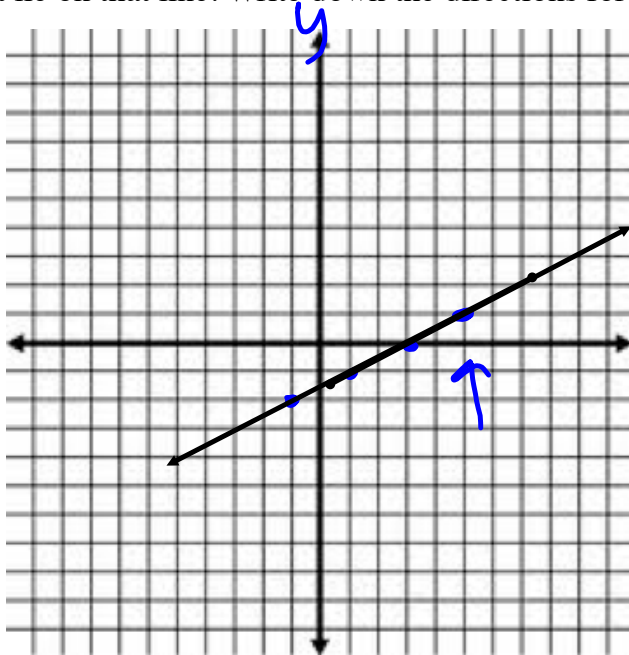
$$a_n = d(n-1) + f$$

1. On the coordinate plane to the right, label the x and y axis.

2. Plot a point at (-1, -2). From that point, go up 1 and right 2 and plot a second point. From that second point go up 1 and right 2 again and plot your third point. From that point, go up 1 and right 2 again and plot the 4th point. Write the ordered pair for the 4th point here (5, 1) ←

How would you describe a line that contain each of these points (Straight, Curvy or unpredictable?)

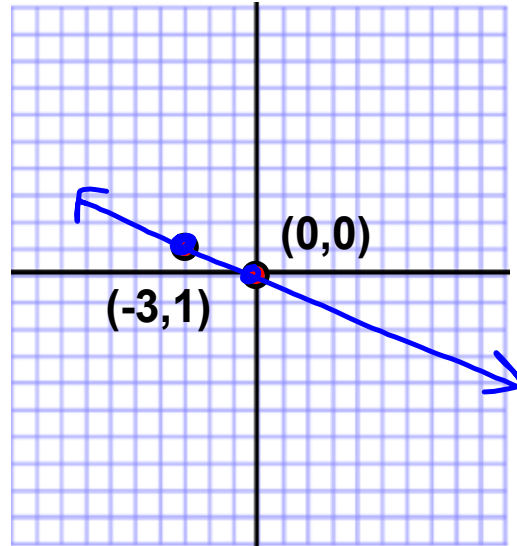
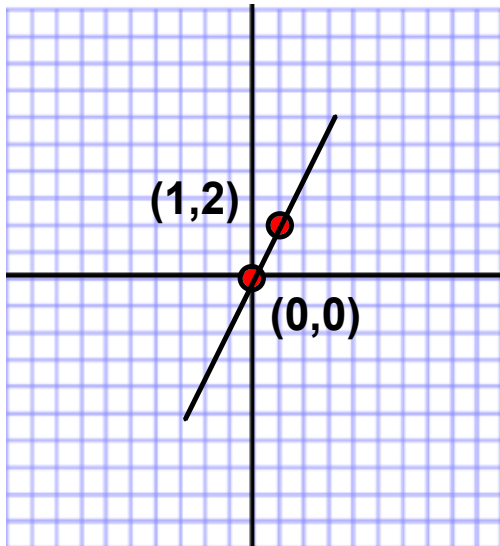
3. Using your ruler sketch a line that runs through these points and plot several other points that lie on that line. Write down the directions for finding the next point.



Directions Use + sign to indicate up or right.
Use - to indicate down or left

Up / Down (vertical change)? $\frac{+1}{+2}$
Right / Left (horizontal change)? $+2$
Slope

Using your ruler sketch a line that runs through the given points and plot several other points that lie on that line. Write down the directions for finding the next point.



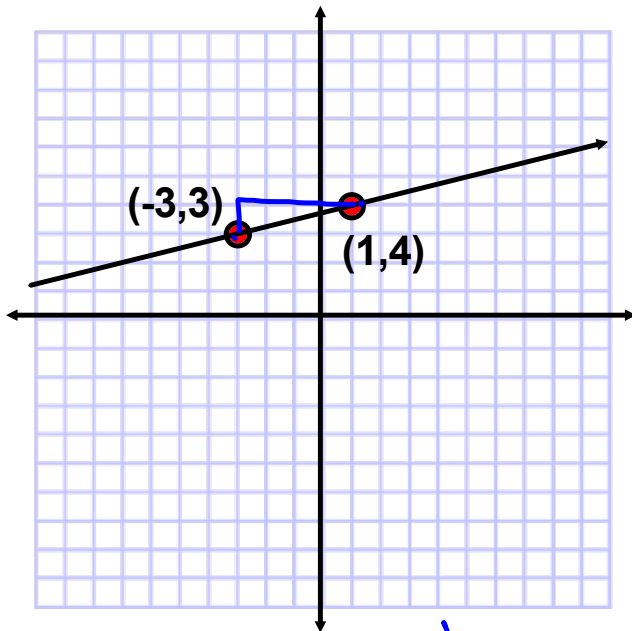
Directions: Vertical change = $\text{Up } 2 = 2$
 Horizontal change = $\text{R. } 1 = 1$

Directions : Vertical change = $\text{down } 1 = -1$
 Horizontal change = $\text{R. } 3 = 3$

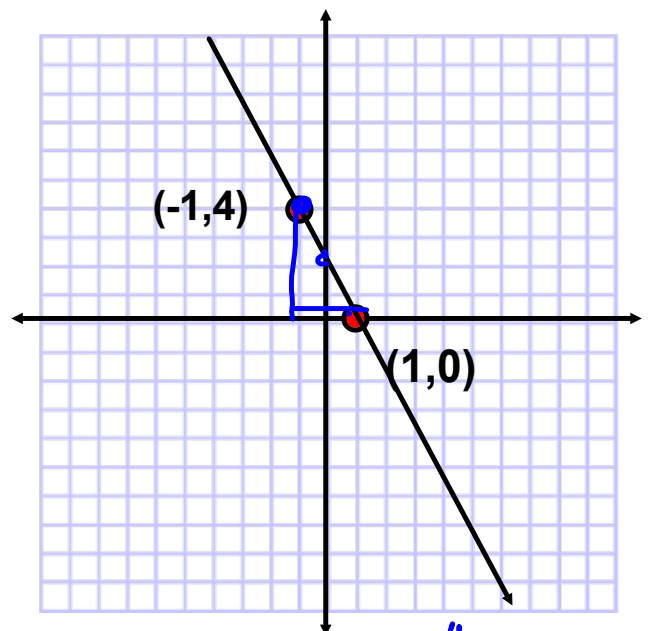
$$\frac{\text{vertical change}}{\text{horizontal change}} = \frac{\text{Change in } y}{\text{Change in } x} = \text{slope}$$

SLOPE

Write the slope of each line.



$$\text{slope} = \frac{\text{Change in } y}{\text{Change in } x} = \frac{1}{4}$$



$$\text{slope} = \frac{\text{Change in } y}{\text{Change in } x} = \frac{-4}{2} = -2$$

Which of the above lines have:

Positive slope:

6

Negative slope:

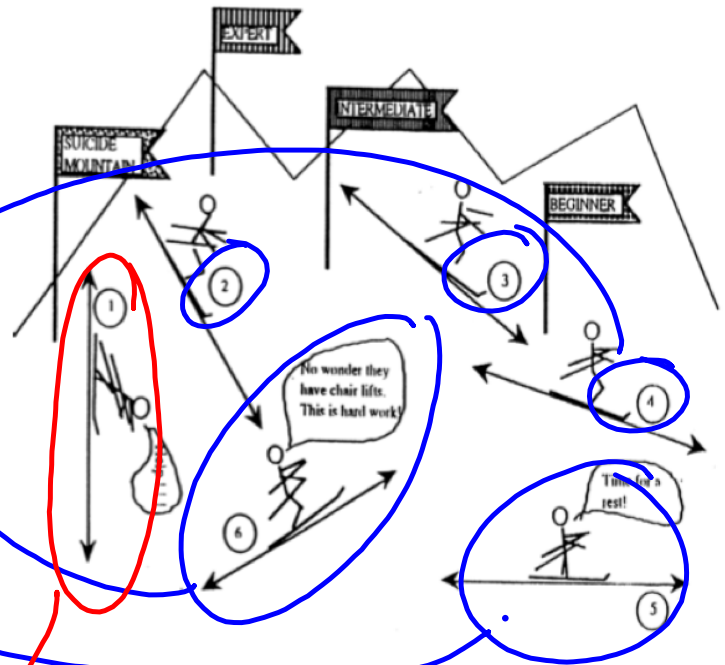
2, 3, 4

0 slope:

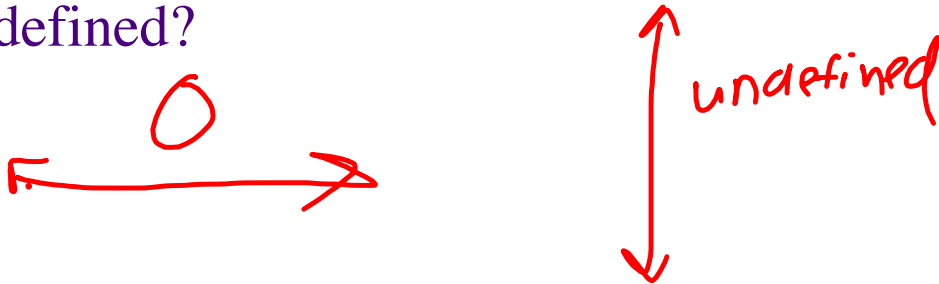
5

Undefined:

1



What is the difference between having 0 slope and undefined?

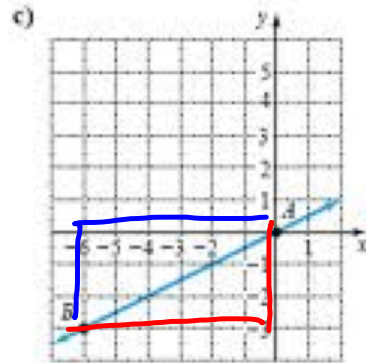
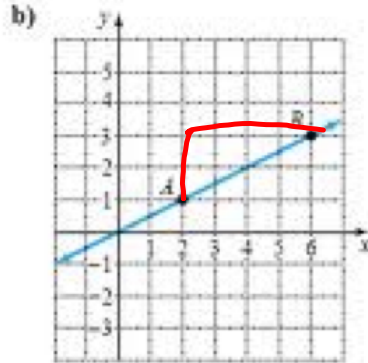
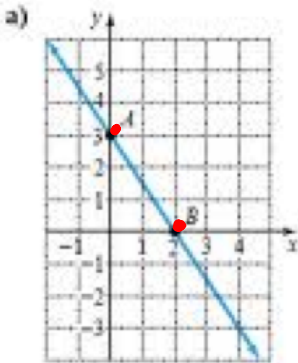


What kind of lines have 0 slope?

HORIZONTAL line

What kind of lines have an undefined slope?

VERTICAL LINE



Example a)

1. Positive or Negative slope?

The slope is: $\frac{-3}{2}$

Example b)

1. Positive or negative slope?

The slope is: $\frac{2}{4} = \frac{1}{2}$

Example c)

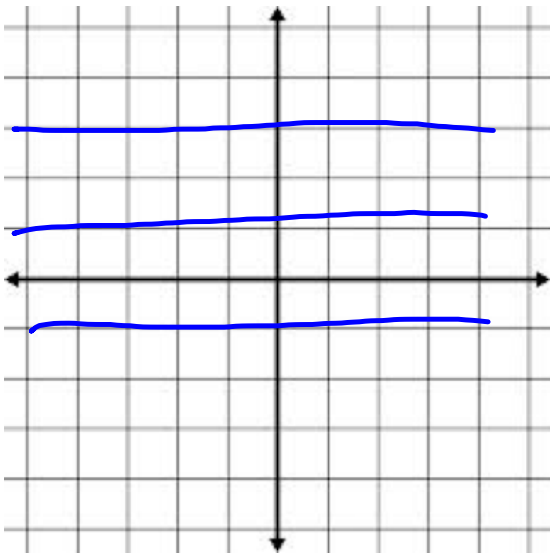
1. Positive or negative slope?

The slope is: $\frac{-3}{-6} = \frac{1}{2}$

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

On the following two coordinate planes draw a line with the following slopes:

Slope: 0



Slope: Undefined

