



# THE SLOPE OF A LINE

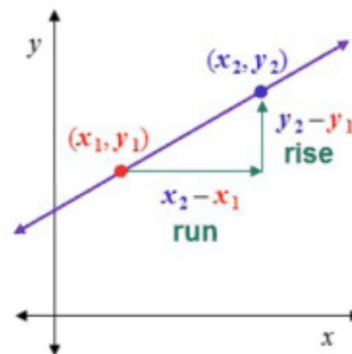
Chapter 4  
Section 4

## SLOPE

- Slope: rate of change of a line
  - The steepness of a line

$$m = \frac{\text{rise}}{\text{run}} \quad m = \frac{\text{change in } y}{\text{change in } x} \quad m = \frac{y_2 - y_1}{x_2 - x_1}$$

- Where  $m$  = slope



## FINDING SLOPE

○ Find Slope Using Two Points:

1. (2,3) (5,4)

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

$$m = \frac{4 - 3}{5 - 2}$$

$$m = \frac{1}{3}$$

2. (5,-1) (-3,6)

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

$$m = \frac{6 - (-1)}{-3 - 5}$$

$$m = \frac{7}{-8}$$

FIND THE SLOPE OF THE FOLLOWING:

○ 3.  $(-1, 2)$  and  $(-3, 4)$   
 $x_1 \ y_1 \quad x_2 \ y_2$

$$m = \frac{4 - 2}{-3 - (-1)} = \frac{2}{-2}$$

$$m = -1$$

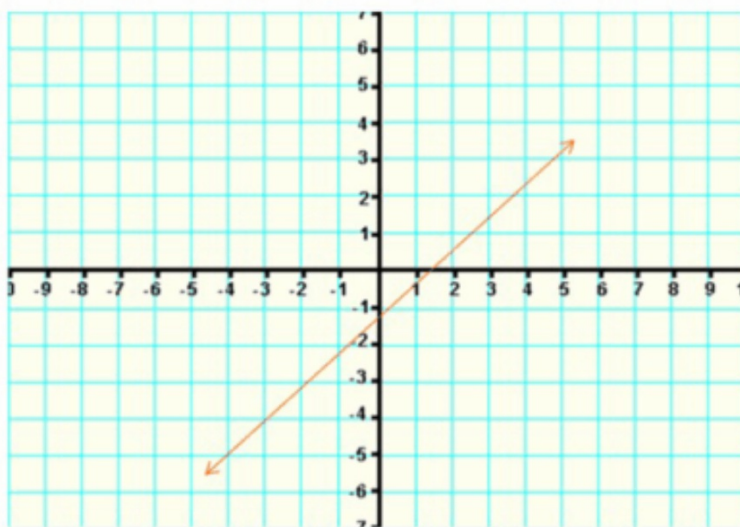
○ 4.  $(-3, -5)$  and  $(9, 10)$   
 $x_1 \ y_1 \quad x_2 \ y_2$

$$m = \frac{10 - (-5)}{9 - (-3)} = \frac{15}{12}$$

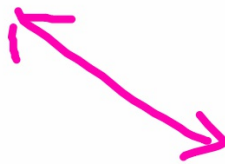
$$m = \frac{5}{4}$$

## POSITIVE SLOPE

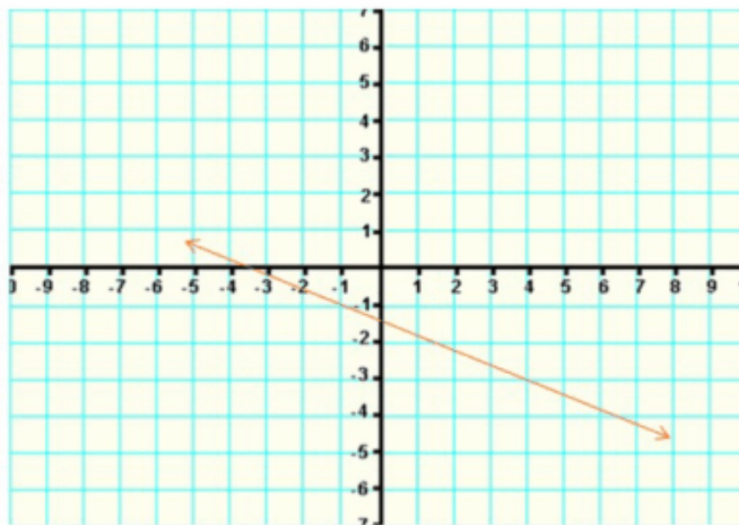
- A line that rises from left to right is a positive slope.



## NEGATIVE SLOPE



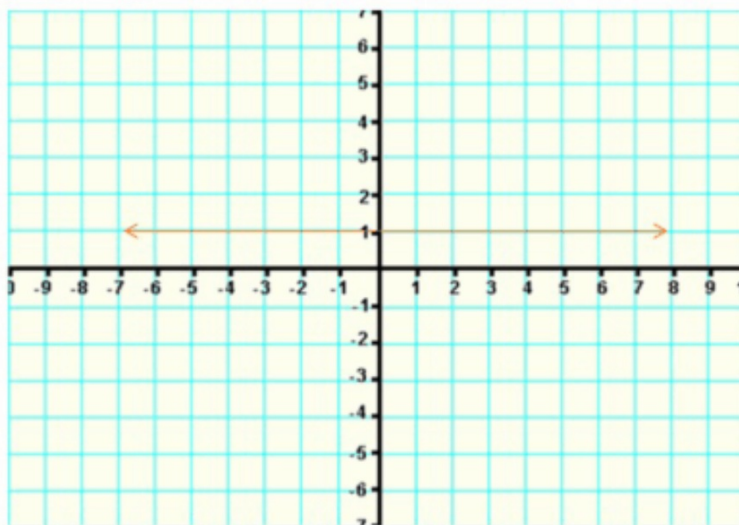
- A line that with a negative slope falls from left to right.



## ZERO SLOPE

- A line with zero slope is a horizontal line.
- The  $m$  value will come out to be 0 over a number, which means the slope is zero.
- An **equation** that is  **$y = \text{a number}$** , the slope will always be zero

$$y = 1$$

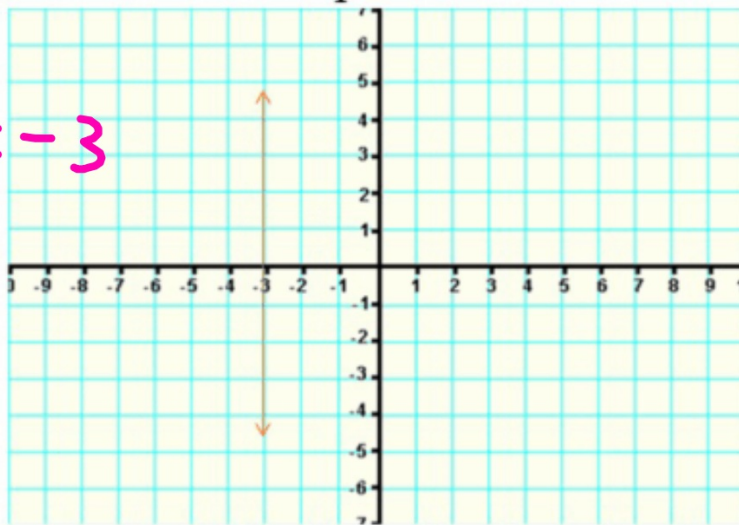


## UNDEFINED SLOPE



- A line that is an undefined slope is a vertical line.
- The  $m$  value will come out to be a non-zero number over 0.
- An **equation** that is  $x = a$  number will always have an undefined slope

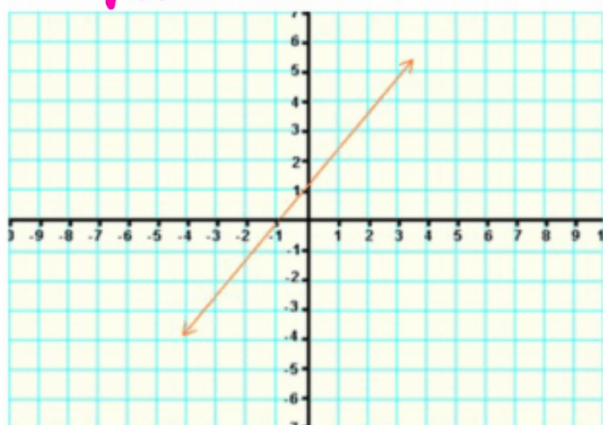
$$x = -3$$



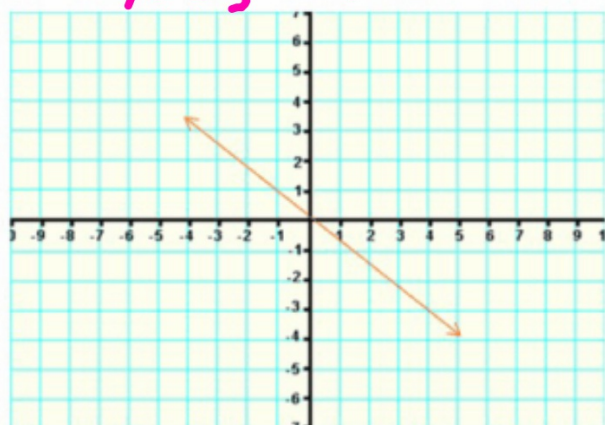


DESCRIBE THE SLOPE OF THE  
FOLLOWING:

Positive

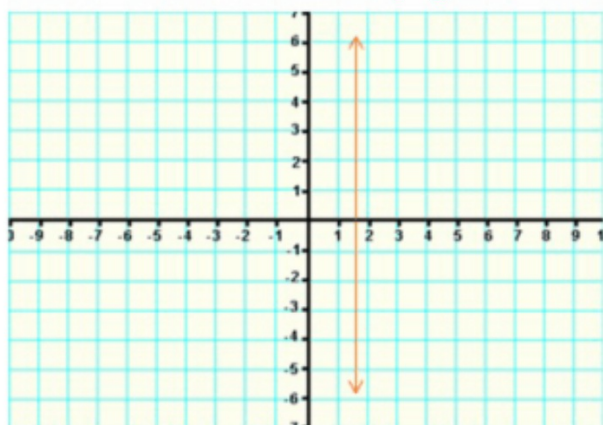


Negative

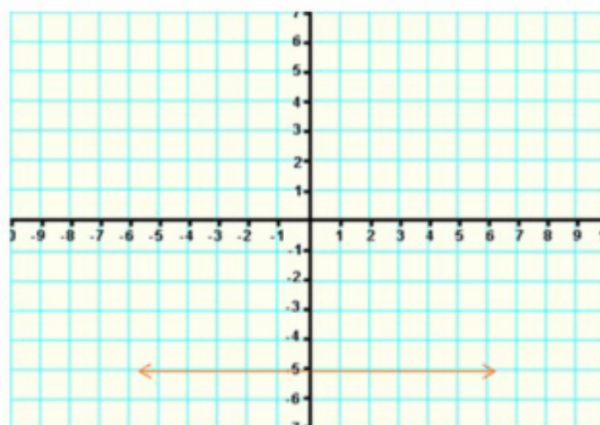


DESCRIBE THE SLOPE OF THE  
FOLLOWING:

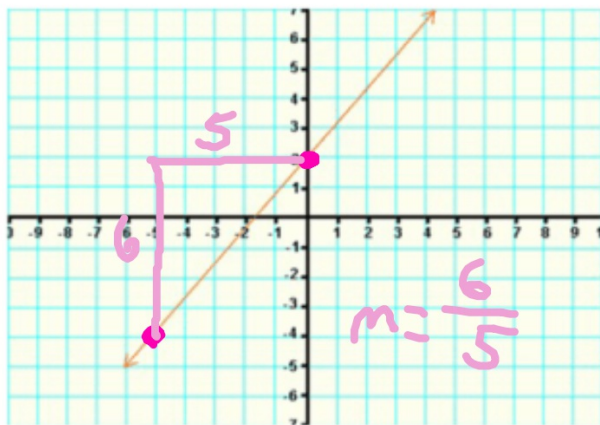
Undefined  $U$



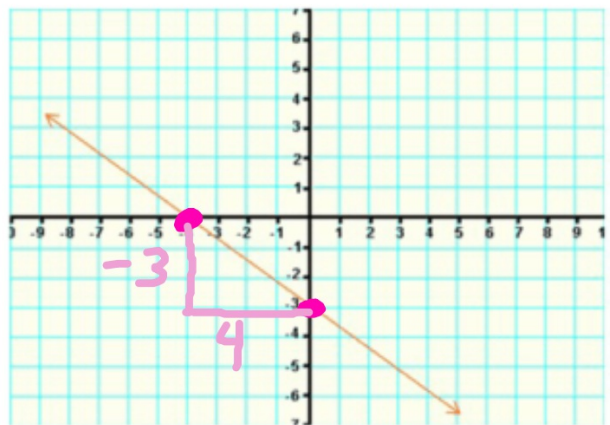
Zero  $0$



WHAT IS THE SLOPE?



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



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



## CLASS WORK

- Blue Book: Pg 123 # 1-14



## HOMEWORK

- Page 230 # 5-10, 21-33 odd

