4.4: Find Slope and Rate of Change
Goals: *Find slope of a line given two points
*Find slope of a graphed line
*Find and interpret rate of change

Definition	Formulas
<u>SLOPE</u> -	Formula When To Use
The ratio of vertical change to horitzontal change of a line	$v_2 - v_1$ When given two
	$m = \frac{y_2}{x_2 - x_1}$ when given two points
<u>SYNONYM:</u>	<i>rise</i> When a line is
Steepness of a line	$m = \frac{1}{run}$ graphed
	$m = \frac{\Delta y}{\Delta x}$ When a line is graphed
Direction	Zero vs. Undefined
Positive – as x increases y increases	Undefined $\frac{\#}{0}$ "if the zero is under the line the slope is undefined"
Negative – as x increases y decreases	Zero – as x increases y stays the same $\frac{0}{\#}$

Find the slope of the line that passes through the given points. (Be sure to write down the formula you are using)

Ex: (5, 2) and (4, -1)

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

$$m = \frac{-1 - 2}{4 - 5}$$

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

$$m = 3$$
Ex: (-2, 3) and (4, 6)

$$m = \frac{6 - 3}{4 - (-2)}$$

$$m = \frac{3}{6}$$

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

Ex:
$$\left(\frac{9}{2},5\right)$$
 and $\left(\frac{1}{2},-3\right)$ **Ex:** (3, 4) and (-2, 4)

$$m = \frac{-3-5}{\frac{1}{2}-\frac{9}{2}} \qquad m = \frac{4-4}{-2-3}$$

$$m = \frac{-8}{\frac{-8}{2}} \qquad m = \frac{0}{-5}$$

$$m = \frac{-8}{-4} \qquad m = 0$$

$$m = 2$$

Ex: (-5, 1) and (-5, 3)

$$m = \frac{3-1}{-5-(-5)}$$
$$m = \frac{2}{0}$$

m = undefined

Find the slope of the line graphed.

For each graph, use the formula $\frac{rise}{run}$



m = 5













