Lesson 2.2.3 Identifying Rates of Change
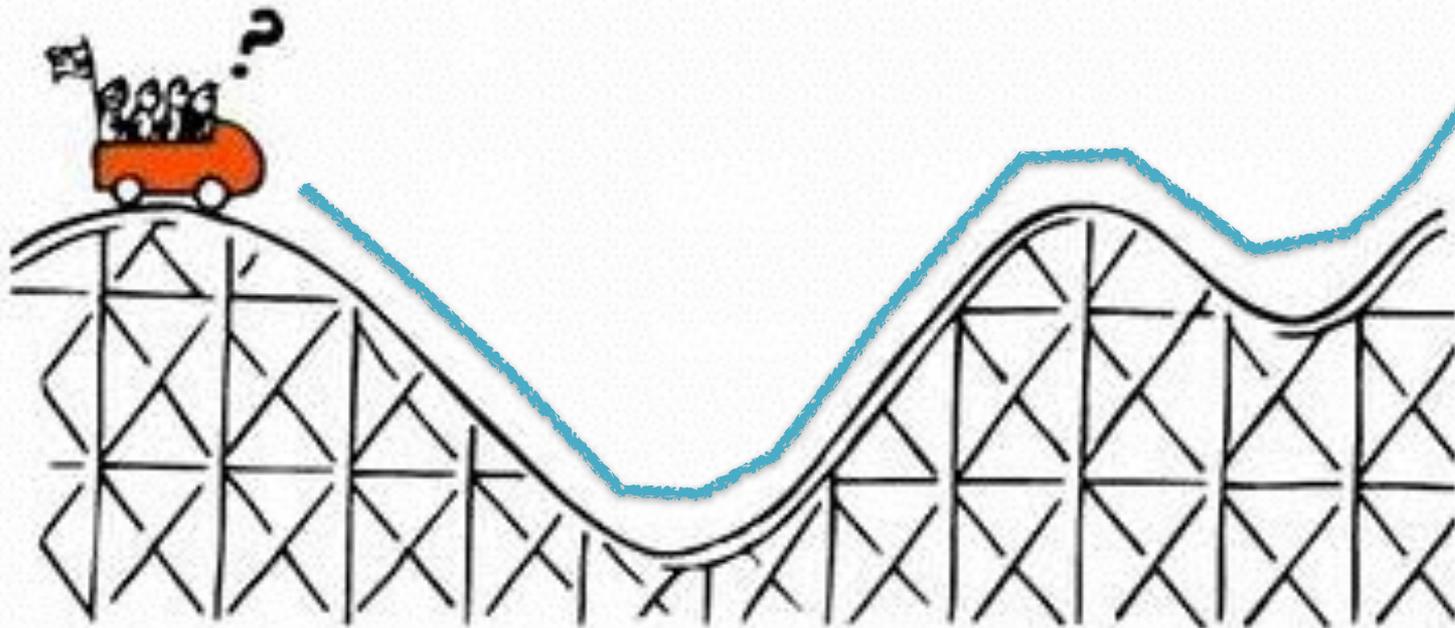
By the end of this lesson, I will be able to answer the following questions…

1. How do I calculate the Rate of Change over an interval?

2. What is the Rate of Change used for?

3. How do I use technology to analyze Rate of Change?

Vocabulary

$$\frac{f(b) - f(a)}{b - a}$$

1. Slope and it's meaning:
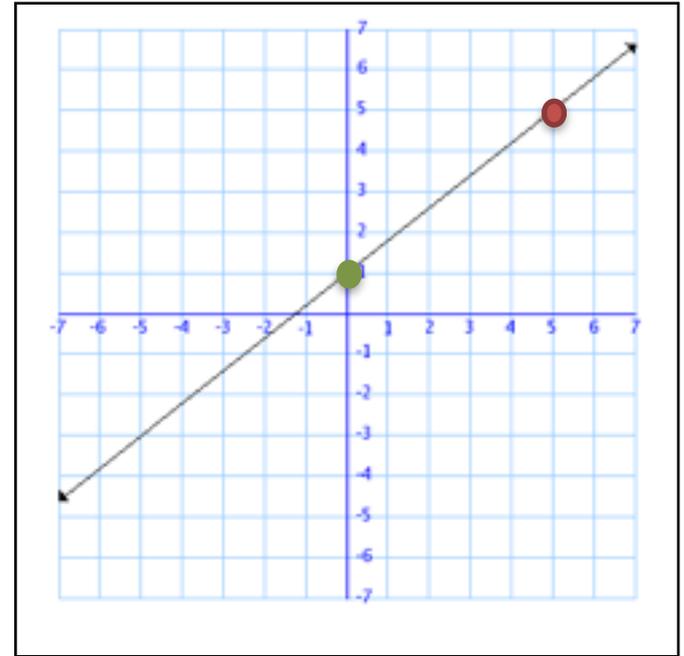
2. Rate Definition: $\text{rate} = \dfrac{\text{distance}}{\text{time}}$

Prerequisite Skills with Practice

Interpreting slope based on signs:
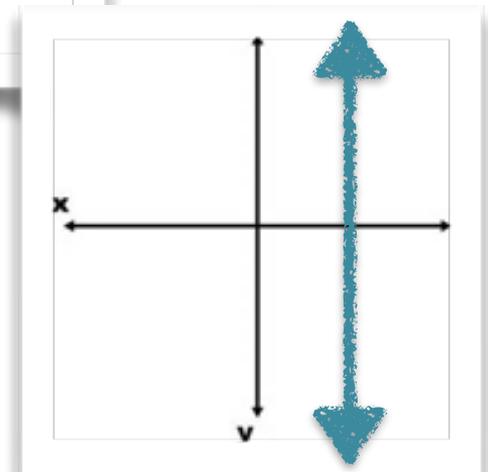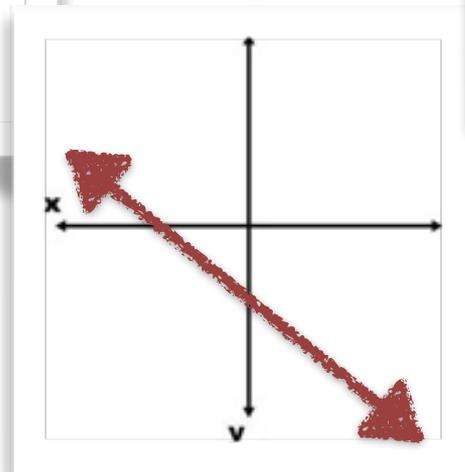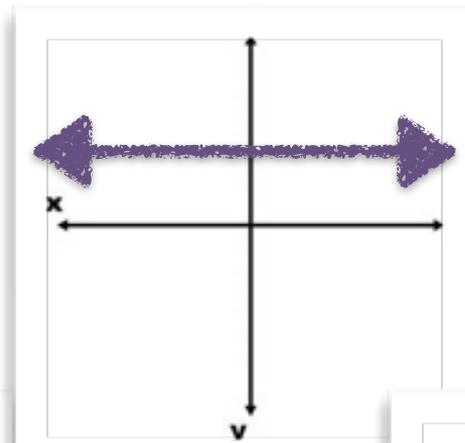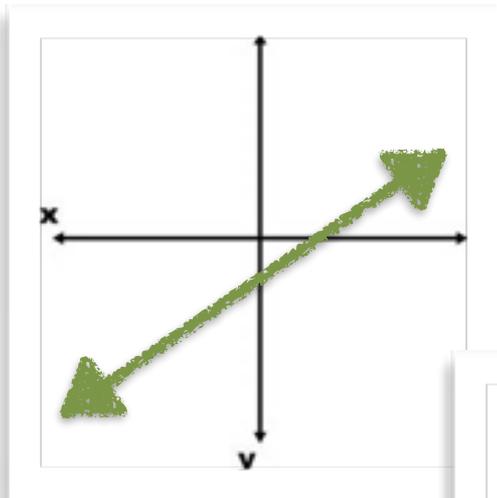
Example One

Calculating the rate of change only given the function.

Calculate the average rate of change for the function

$$f(x) = x^2 + 6x + 9$$

between $x = 1$ and $x = 3$.

Example Two

Calculating the rate of change only given the graph of the function.

Calculate the average rate of change for the function between the following values.

- x = -4 and x = -3

- x = -3 and x = -2

- x = - 2 and x = -1
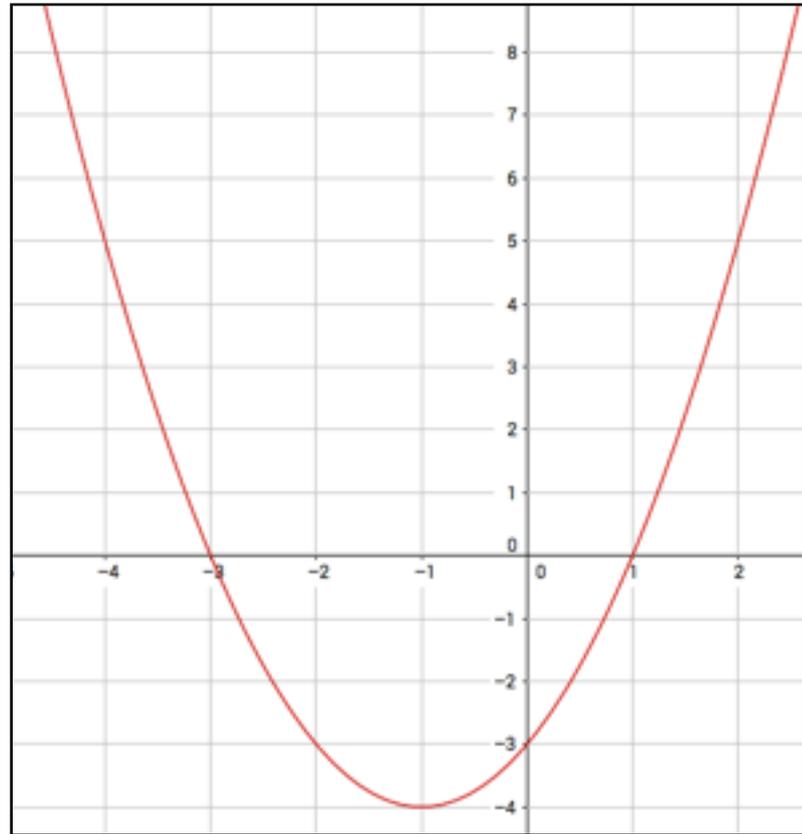
Example Three

Calculating the rate of change only given the function and comparing results to another function.

For the function

$$f(x) = (x-3)^2 - 2$$

is the average rate of change greater between $x = -1$ and $x = 0$ or between x=1 and x=2?

Example Four

Calculating the rate of change only given a table of values

Find the average rate of change between $x = -0.75$ and $x = -0.25$ for the following function.

x	y
−1	0
−0.75	3.44
−0.5	6.25
−0.25	8.44
0	10
0.25	10.94

THE END

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