

Math 2 Unit 10 Notes 8
Average Rate of Change

Name: _____
 Date: _____ Per: _____

[1-4] A toy car is traveling up an inclined plane. The graph shows the distance the car has traveled at t seconds. Use the graph to answer the questions.



1. Use the graph to estimate the distance the car has traveled at:
 - a) 1 second: _____
 - b) 3 seconds: _____
 - c) 5 seconds: _____

2. What is the average rate of change from 1s to 3s?
 Make sure to include units.

3. What is the average rate of change from 3s to 5s?
 Make sure to include units.

4. What do the answers to questions 2 and 3 tell you about the movement of the car in the two different time intervals?

[5-6] Given $f(x) = x^2$ and $g(x) = 2^x$, evaluate the following problems.

$f(x) = x^2$

| x | $f(x)$ |
|-----|--------|
| 1 | |
| 2 | |
| 3 | |
| 4 | |
| 5 | |

$g(x) = 2^x$

| x | $g(x)$ |
|-----|--------|
| 1 | |
| 2 | |
| 3 | |
| 4 | |
| 5 | |

5a) Average rate of change of $f(x)$ from $x = 1$ to $x = 3$

5b) Average rate of change of $g(x)$ from $x = 1$ to $x = 3$

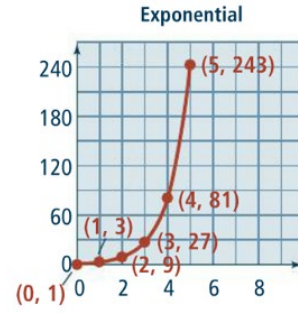
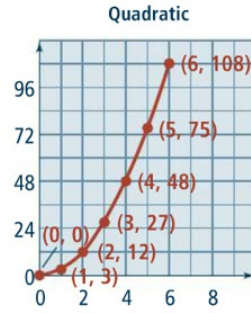
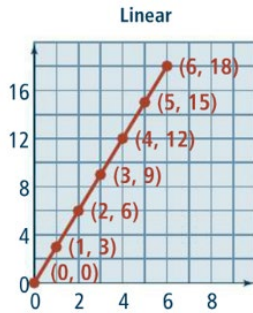
5c) The average rates of change are different. What does this mean in relationship to the graphs?

6a) Average rate of change of $f(x)$
 from $x = 3$ to $x = 5$

6b) Average rate of change of $g(x)$
 from $x = 3$ to $x = 5$

6c) The average rates of change are different. What does this mean in relationship to the graphs?

[7-13] Use the graphs below to answer the questions.



7. Complete the table for each of the three graphs.

Linear

| Interval | Average Rate of Change |
|----------|------------------------|
| 0 to 1 | |
| 1 to 2 | |
| 2 to 3 | |
| 3 to 4 | |
| 4 to 5 | |

Quadratic

| Interval | Average Rate of Change |
|----------|------------------------|
| 0 to 1 | |
| 1 to 2 | |
| 2 to 3 | |
| 3 to 4 | |
| 4 to 5 | |

Exponential

| Interval | Average Rate of Change |
|----------|------------------------|
| 0 to 1 | |
| 1 to 2 | |
| 2 to 3 | |
| 3 to 4 | |
| 4 to 5 | |

- What do you notice about the average rate of change for the linear function?
- What do you notice about the average rate of change for the quadratic function?
- What do you notice about the average rate of change for the exponential function?
- Compare the average rate of change for the quadratic function and for the exponential function. Which average rate of change increases more quickly?
- Over what interval is the average rate of change for the linear function greater than that of the exponential function?
- Which function has the greatest average rate of change over the interval 1 to 2?