Name_____

Exponential Multiple Representations

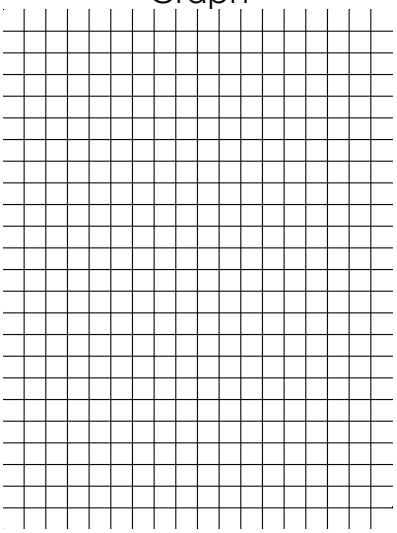
Equation

$f(x) = -4(2)^x$

Table

x	f(x)
-2	
-1	
0	
1	
2	

Graph

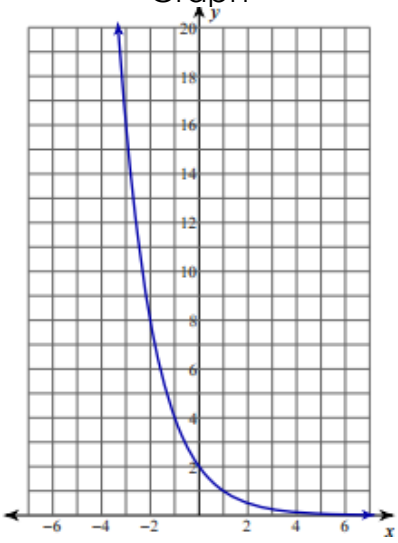


Equation

Table

x	f(x)
-2	
-1	
0	
1	
2	

Graph

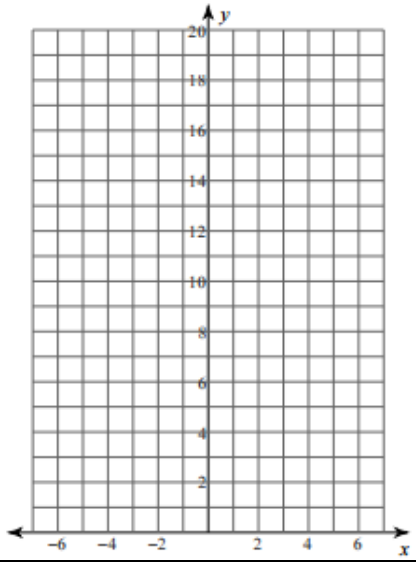


Equation

Table

x	f(x)
-2	$\frac{2}{3}$
-1	2
0	6
1	18
2	54

Graph



Average Rate of Change

- Linear functions have a constant rate of change called the slope of the line. We only find slope for linear functions. The slope of a line does not change no matter where you find it on the line.

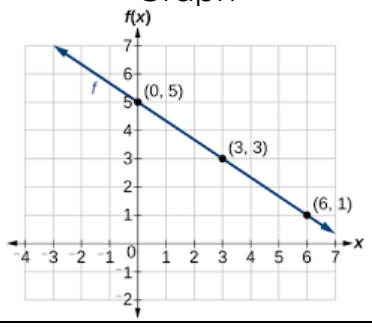
What do we do for other types of functions?

- Find the average rate of change in a specific interval. (It will change for each different interval!)

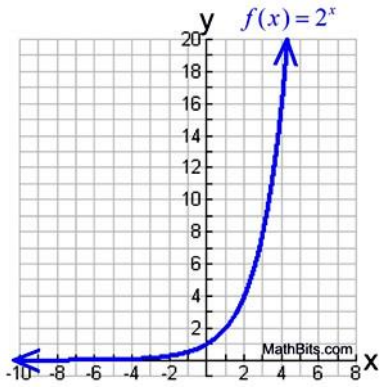
The **average rate of change** between any two points $(x_1,f(x_1))$ and $(x_2,f(x_2))$ is the change of y over the change in x at the **two endpoints of the interval.** Average rate of change describes on average how a function is changing over an interval.

$$m = \frac{y_2 - y_1}{x_2 - x_1} \quad becomes \quad \frac{f(x_2) - f(x_1)}{x_2 - x_1}$$

Find the **slope** from an equation, a table, and a graph.

Equation	Table	Graph
$y = 5x + 10$	x | f(x) -2 | 6 0 | 12 2 | 18 4 | 24 6 | 30	

Find the **average rate of change on an interval** from an equation, a table, and a graph.

Equation	Table	Graph
$f(x) = 3(2)^x$ Find the average rate of change on the interval $0 \le x \le 2$ Find the average rate of change on the interval $3 \le x \le 5$ Why were they not the same?	x | f(x) 0 | 1 1 | 3 2 | 9 3 | 27 4 | 81 Find the average rate of change on the interval $0 \le x \le 2$ Find the average rate of change on the interval $2 \le x \le 4$	 Find the average rate of change on the interval $0 \le x \le 3$