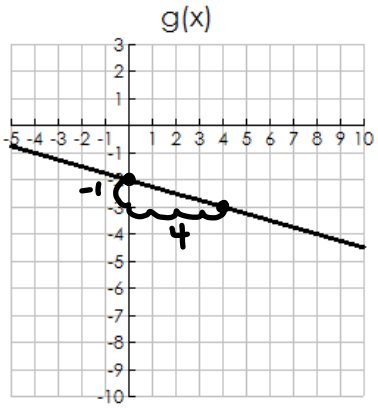
Name _____ Date _____

1. For the following two functions, write the equations of each and complete the chart using <, >, or = to compare them.

f(x) = $-2x+5$

g(x) = $\frac{-1}{4}x-2$

x	f(x)
-3 **-2**	11 **9**
-1 **0**	7 **5**
1 **2**	3 **1**
3 **4**	-1 **-3**
5	-5



Characteristic of f(x)	<, >, or =	Characteristic of g(x)
y-intercept of f(x) =		y-intercept of g(x) =
f(4) =		g(4) =
Rate of Change of f(x) =		Rate of Change of g(x) =

2. Pertaining to the table at the right:

x	f (x)
1	21
2	18
3	16
4	10
5	8

a) Find the average rate of change on the interval $2 \leq x \leq 3$.

A. 2 B. -2 C. 6.8 D. -6

b) Find the average rate of change on the interval $4 \leq x \leq 5$.

A. 2 B. -2 C. 6.8 D. -6

c) Find the average rate of change on the interval $3 \leq x \leq 4$.

A. 2 B. -2 C. 6.8 D. -6

d) Is the function displayed in the table a linear function?

Let's fill out the table to compare linear, quadratic and exponential functions over time.

x	Linear $y = 2x + 2$	Quadratic $y = x^2 + 2$	Exponential $y = 2^x$
0	2	2	1
1	4	3	2
2	6	6	4
3	8	11	8
4	10	18	16
5	12	27	32

1. Calculate and compare the slopes for each function from $x_1 = 0$ to $x_2 = 1$.

Linear's R.O.C	Quadratic's R.O.C.	Exponential's R.O.C.
$\frac{4-2}{1-0} = \frac{2}{1} = 2$	$\frac{3-2}{1-0} = \frac{1}{1} = 1$	$\frac{2-1}{1-0} = \frac{1}{1} = 1$
Whose R.O.C. is the steepest? Linear		

2. Calculate and compare the slopes for each function from $x_1 = 2$ to $x_2 = 3$.

Linear's R.O.C	Quadratic's R.O.C.	Exponential's R.O.C.
Whose R.O.C. is the steepest?		

3. Calculate and compare the slopes for each function from $x_1 = 4$ to $x_2 = 5$.

Linear's R.O.C	Quadratic's R.O.C.	Exponential's R.O.C.
$\frac{12-10}{5-4} = \frac{2}{1} = 2$	$\frac{27-18}{5-4} = \frac{9}{1} = 9$	$\frac{32-16}{5-4} = \frac{16}{1} = 16$
Whose R.O.C. is the steepest? Exponential		

★VERY IMPORATANT TO KNOW!
Conclusion over a LONG period of time the Exponential function will exceed the value of the other functions.

4. Based on the graph on the right, which statement is not true?

A. Functions f and g have the same x-intercept.

B. The ordered pair (1, 2) is a solution for f(x).

C. The ordered pair (2, 7) is a solution for g(x).

D. The value of f(x) begins to exceed g(x) during the interval x = 1 and x = 2.