Algebra 1

Name: Key

Transformations & Characteristics of Exponential Function

Date: _____ Block: _____

Part 1: Describe the transformations for each of the functions below:

1.) $f(x)=2^{-x}$ Growth 2	2.) $b(x)=-(2)(2)^{x+1}-2$ Reflect x Stretch 2 Growth 2 left 1 down 2
3.) $k(x)=-\left(\frac{1}{2}\right)^{x}+3$ Reflect x Decay $\frac{1}{2}$ up 3	4.) $m(x)=\left(\frac{1}{2}\right)^{x+4}$ Decay $\frac{1}{2}$ left 4
5.) $g(x)=2^{x+5}-1$ Growth 2 left 5 down 1	6.) $p(x)=\left(\frac{1}{3}\right)^{x-1}-2$ Decay $\frac{1}{3}$ Right 1 Down 2
7.) $t(x)=\left(\frac{1}{2}\right)(3)^{x-1}+4$ Shrink $\frac{1}{2}$ Growth 3 Right 1 up 4	8.) $h(x)=-2^{x-3}$ Reflect x Growth 2 Right 3
9.) $c(x)=-(2)^{2x}$ Reflect x Growth 2	10.) $s(x)=-(3)(2)^{x+2}+4$ Reflect x Stretch 3 Growth 2 left 2 up 4

Directions: Describe the transformations from the parent function to the transformed function:

1. $f(x) = 2^x \rightarrow f(x) = 2^{x-2}$

Right 2

2. $y = \frac{1}{2}(8)^x \rightarrow y = \frac{1}{2}(8)^x + 6$

up 6

3. $y = 4(0.6)^x \rightarrow y = 4(0.6)^x - 3$

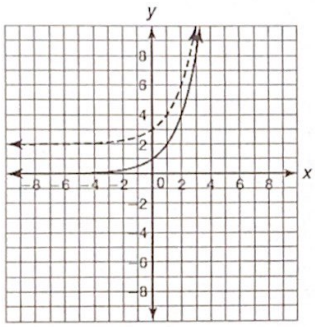
down 3

4. $f(x) = 4^x \rightarrow f(x) = 4^{x+3} - 8$

left 3
down 8

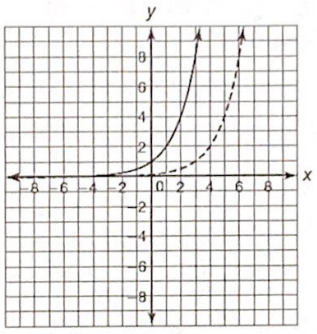
Directions: Using the graphs of f(x) and g(x), described the transformations from f(x) to g(x). F(x) is the solid line and g(x) is the dotted line.

5.



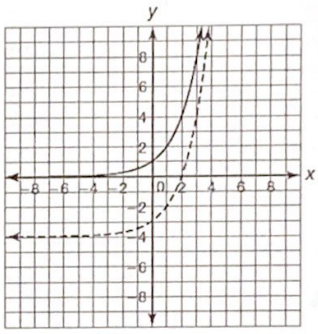
up 2

6.



Right 3

7.



down 4

Directions: Using the function $g(x) = 5^x$, create a new function h(x) given the following transformations:

8. down 3 units

$y = 5^x - 3$

9. right 8 units

$y = 5^{x-8}$

10. up 4 units and left 2 units

$y = 5^{x+2} + 4$

Directions: Decide whether each of the following is an example of exponential growth (increase) or decay (decrease). Then state the y-intercept.

11. $y = 5^x$

Growth

12. $y = \left(\frac{1}{2}\right)^x$

Decay

13. $y = -3^x$

Growth

14. $y = 2\left(\frac{4}{3}\right)^{-x}$

Growth