Algebra 1
Unit 10 Review Guide

Name: Key
Date: _____ Block: _____

Exponential Functions Unit Review

Skill	Things to remember	Examples	
1. Determine if representations are exponential. Explain why or why not	Exponential Functions: -Variable in exponent -Constant Ratios -Graph is a curve Linear Functions: -Constant differences -Graph is a line	a. Determine if the points are exponential or linear: a. exponential x: -3, -2, -1, 0, 1 y: 0.16, 0.8, 4, 20, 100 (x5, x5) b. (-2, 5) (-1, 4) (0, 3) (1, 2) (2, 1) linear (-1, -1)	b. Determine if the equations are linear or exponential: a. $y = 3^x - 4$ exponential b. $y = 2^2$ linear c. $y = 6^{2x}$ exponential
2. Determine if a function is exponential growth or decay and explain why.	0 < b < 1: Decay b > 1: Growth	a. $y = .75\left(\frac{3}{2}\right)^x$ Growth ($\frac{3}{2} > 1$) c. What is the function growing by? $Y = 3(2)^x$ 2	b. $y = \left(\frac{1}{2}\right)^x$ Decay ($0 < \frac{1}{2} < 1$) d. What is constant ratio? $Y = 3(4.5)^x$ 4.5
3. Graph an exponential function.	$y = ab^x$ Create a table with values (5 points is a must)	a. Graph: $f(x) = \left(\frac{1}{2}\right)^x$ x | y -3 | 8 -2 | 4 -1 | 2 0 | 1 1 | 0.5 2 | 0.25	b. Graph: $f(x) = 3 \cdot 2^{x-1} + 1$ x | y -3 | 1.187 -2 | 1.375 -1 | 1.75 0 | 2.5 1 | 4 2 | 7
4. Describe the transformations of an exponential function.	$f(x) = a(b)^{x-h} + k$ **a** stretches or shrinks AND/OR reflects **k** moves the function up and down. **h** moves the function left and right. The new asymptote is the line y = k.	a. Given the function $f(x) = 2^x$ write a new equation after a transformation of left 7 and up 3. $f(x) = 2^{x+7} + 3$ c. Describe the transformation $h(x) = 10^x$ to $k(x) = 4(10)^{x+1} - 5$. Stretch by 4 Left 1 down 5	b. Given the function $g(x) = 2^x$, write a new equation after a transformation of right 9 and reflect across the x-axis. $g(x) = -2^{x-9}$ d. Describe the transformation from a(x) to b(x). down 3