Pre-Calculus/Trig 3 Name: _____

UNIT 3: Exponential & Logarithmic Functions – SECTION 2 WORKSHEET Date: _____

EXPONENTIAL FUNCTIONS & THEIR GRAPHS

Directions: Using the parent graph of $f(x) = 4^x$, describe the transformations of each function.

1.) $f(x) = -2(4)^{x+3} - 5$

2.) $f(x) = 4^{2x+6} + 2$

3.) $f(x) = 4^{-3x+12} + 1$

4.) $f(x) = 4^{\frac{1}{2}x-2} + 3$

5.) $f(x) = \frac{1}{3}(4)^{\frac{1}{3}x+3} - 4$

6.) $f(x) = -4^{-2x+4} + 7$

Directions: Using the parent graph of $f(x) = e^x$, describe the transformations of each function.

7.) $f(x) = \frac{1}{2}e^{2x+8} - 9$

8.) $f(x) = -e^{\frac{1}{2}x+4} - 1$

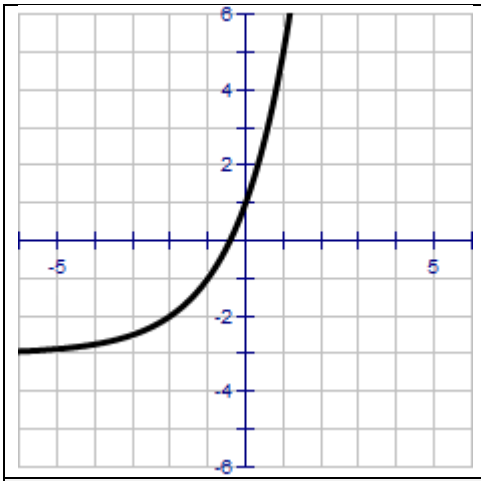
9.) $f(x) = 4e^{-x+3} - 8$

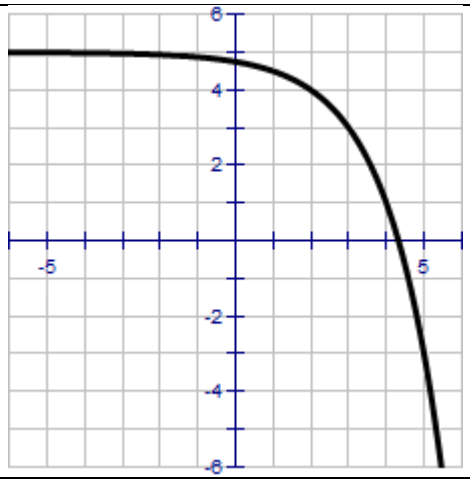
10.) $f(x) = e^{\frac{1}{4}x+1} - 3$

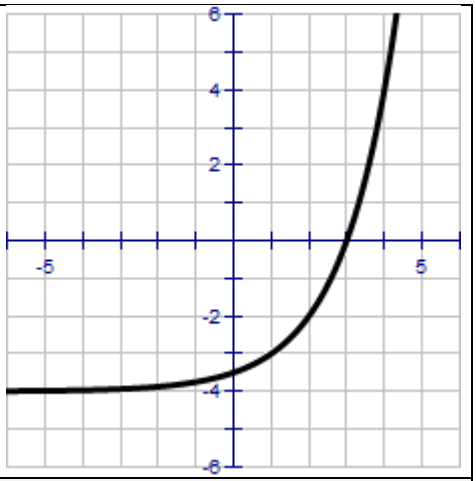
11.) $f(x) = 2e^{x-5} - 10$

12.) $f(x) = e^{3x-6} + 4$

Directions: Compare each graph to $f(x) = 2^x$. Write the equation as well as a description of each transformation.

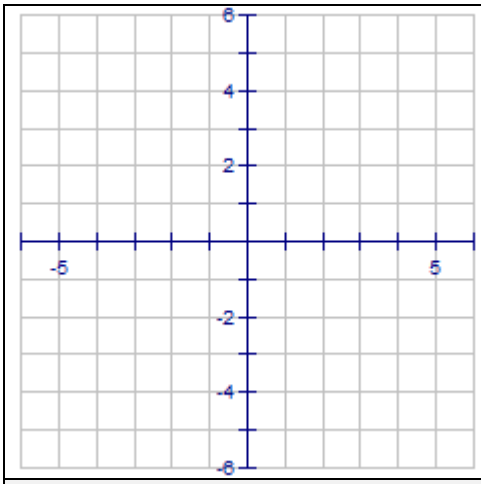
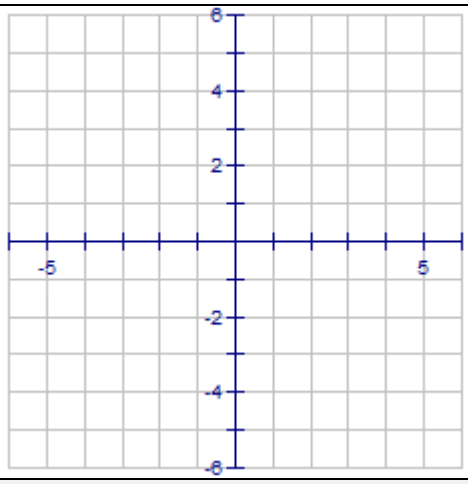
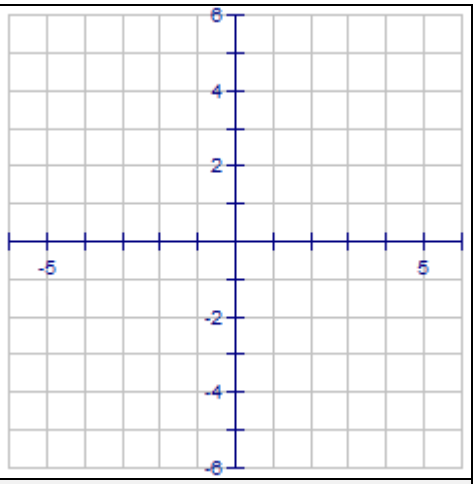




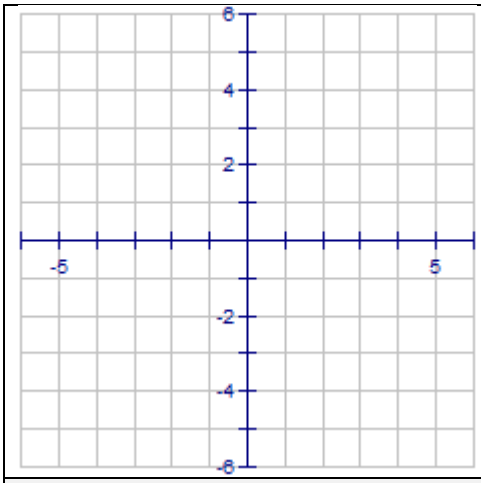
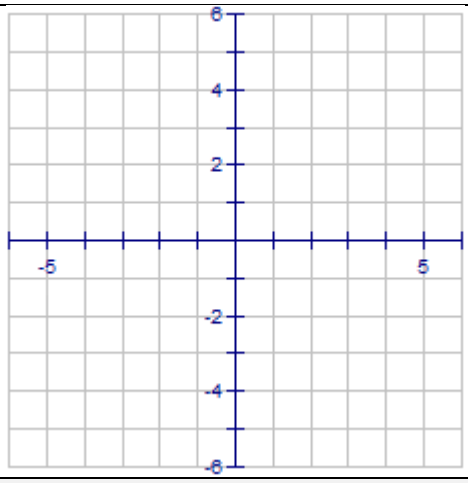
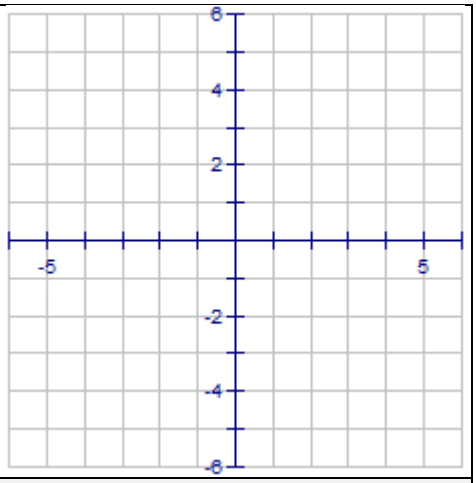


EQUATION	EQUATION	EQUATION
$f(x) =$ _____	$f(x) =$ _____	$f(x) =$ _____
DESCRIPTION	**DESCRIPTION**	**DESCRIPTION**

Directions: Compare each graph to $f(x) = 2^x$. Write a description of each transformation and graph each function.

		
EQUATION	**EQUATION**	**EQUATION**
$f(x) = 2^{x+2} - 5$	$f(x) = 2^{x-2} + 1$	$f(x) = -2^{x-3} + 3$
DESCRIPTION	**DESCRIPTION**	**DESCRIPTION**

Directions: Compare each graph to $f(x) = 2^x$. Write the equation and graph each function.

		
EQUATION	**EQUATION**	**EQUATION**
$f(x) =$ _____	$f(x) =$ _____	$f(x) =$ _____
DESCRIPTION	**DESCRIPTION**	**DESCRIPTION**
An exponential function shifted horizontally to the left 3 units and shifted vertically down 3 units.	An exponential function shifted horizontally to the right 3 units, shifted vertically up 4 units and reflected over the x-axis.	An exponential function shifted horizontally to the left 1 unit, shifted vertically up 2 units, and reflected over the x-axis.