Today's Learning Goal(s):

By the end of the class, I will be able to:

a) graph exponential functions using transformations.

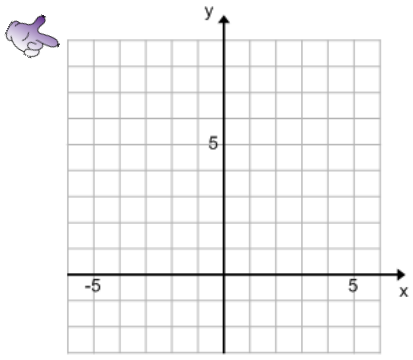
4.6 Transformations of Exponential Functions

Date: _____

Recall: $y = af\left(k\left(x-d\right)\right)+c$

A new Parent Function

$y = b^x$



Same rules apply.
**don't forget to factor k out of (kx - d)

Features:

Horizontal Asymptote

$(1, b)$

$(0, 1)$

Domain

$\left(-1, \frac{1}{b}\right)$

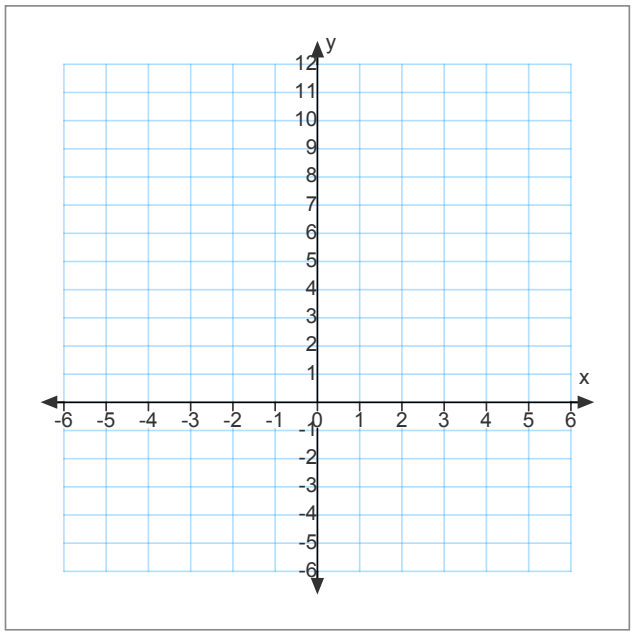
Range

Ex.1 Sketch the following. Given $f(x) = 2^x$

$y = f(x) - 3$

$y = f(x+2)$

$y = 3f(x)$



Ex.2 Exponential Functions:
Name the base function and describe the transformations on each graph.

a) $f(x) = 2^{x-4} + 3$

b) $g(x) = \frac{1}{3}\left(4^{x-2}\right) - 1$

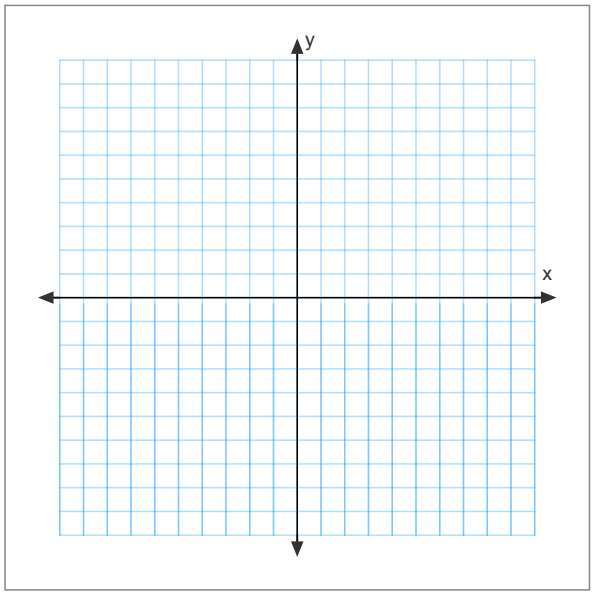
c) $f(x) = \frac{1}{2}\left(5^{3x-9}\right) - 2$

d) $g(x) = -2\left(3^{-2x-4}\right) + 1$

Ex.3 Sketch the graph of $y = -2(4^{x-3}) - 1$.
State the domain and range, and the y-intercept of the graph.

$$y = -2\left(4^{x-3}\right) - 1$$

x	y
-1	
0	
1	



$$y = \left(4^{x}\right)$$

Pull

$y = -2(4^{x-3}) - 1$

Today's Homework Practice includes: pp. 251-253 #(1,2)ab, 3, 4ab, 5ab, 9
(*Oponal Wkst 4.6 Extra Pracce*)