

Graphing Exponential Functions Using Transformations



Name: _____

Date: _____

Exponential function:

$y = a \cdot b^{x-h} + k$, k translates/shifts the graph vertically, h translates/shifts the graph horizontally, and $y = k$ is the horizontal asymptote.

Example: Graph the exponential function $y = 3^{x-4} + 2$.

Step one:

Graph the original function

Blue Line is $y = 3^x$

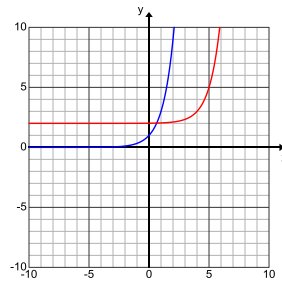
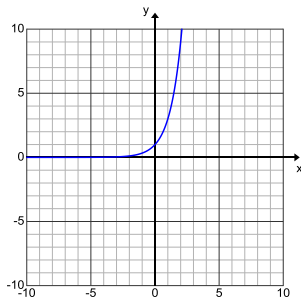
Note: Parent graph characteristics (0,1), (1,3)

Step two:

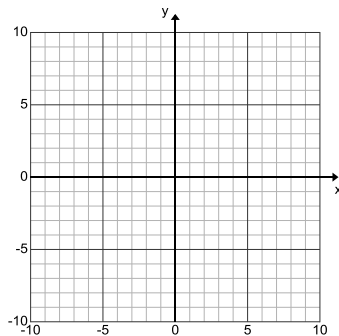
Shift the graph vertically 2 units and horizontally 4 units.

Red line is $y = 3^{x-4} + 2$

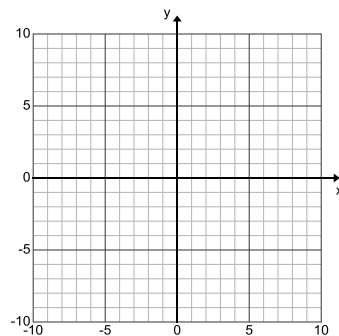
Translates to (4,3), (5,5)



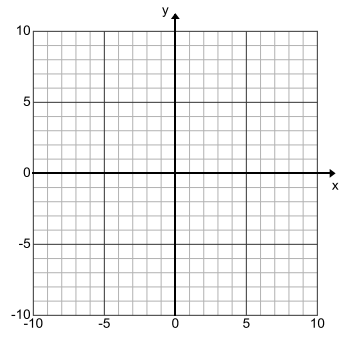
Directions: Graph the following Exponential Functions.



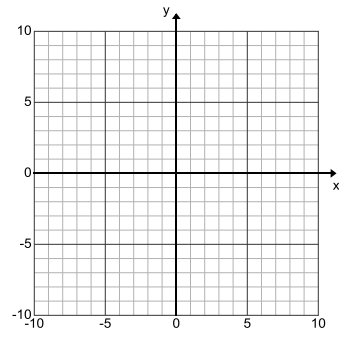
1) $y = 3^{x-4} + 3$



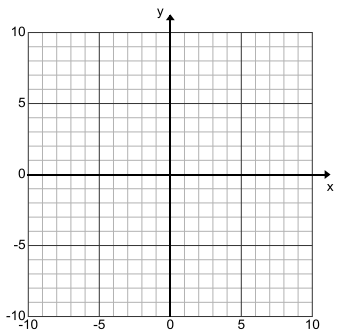
2) $y = 5^{x-6} + 2$



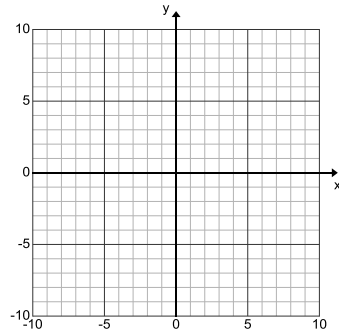
3) $y = 4^{x-2} - 1$



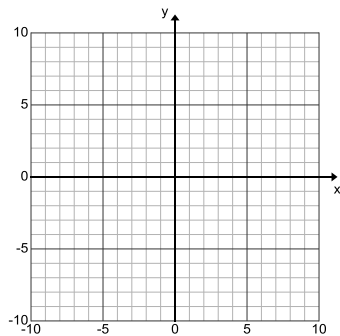
4) $y = 2^{x-4} - 5$



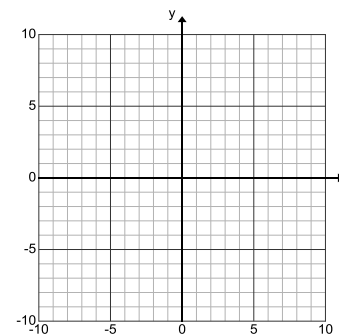
5) $y = 6^{x+1} - 3$



6) $y = 6^x + 3$



7) $y = 5^{x+3} + 8$



8) $y = 5^{x-4} + 7$