

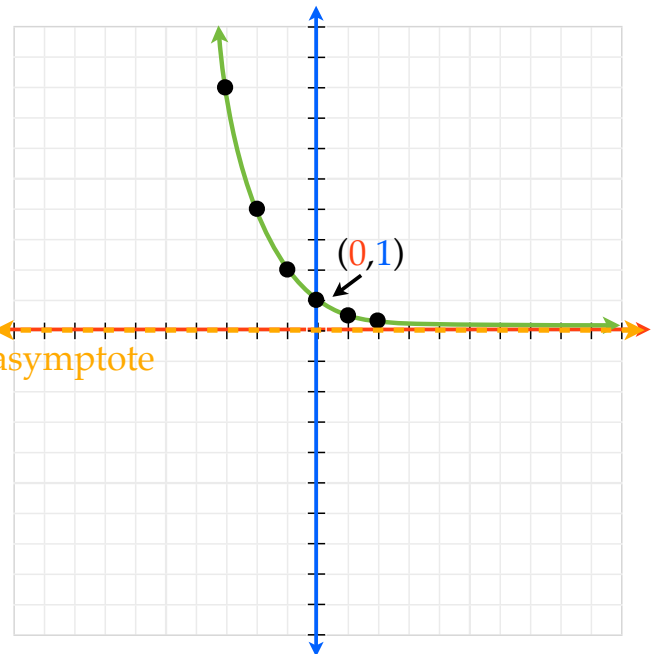
The Exponential Parent Function

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

$$a = 1 \quad b = \frac{1}{2}$$

x	y
-3	8
-2	4
-1	2
0	1
1	0.5
2	0.25

 $x = 0 \Rightarrow$
 $\Rightarrow$ critical point

 $x\text{-axis} \Rightarrow \text{asymptote}$


Exponential Equation

$|a|$ stretches or compresses graph
if $a < 0$, reflection over horizontal asymptote

h gives the horizontal translation
 $h > 0$ shifts right; $h < 0$ shifts left

$$y = a \cdot b^{(x - h)} + k$$

base of exponential equation
 $0 < b < 1$ creates exponential decay

k gives the vertical translation
 $k > 0$ shifts up; $k < 0$ shifts down

Exponential Equation

$$y = a \cdot b^{(x-h)} + k$$

Given exponential equation, label a , b , h , and k .

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

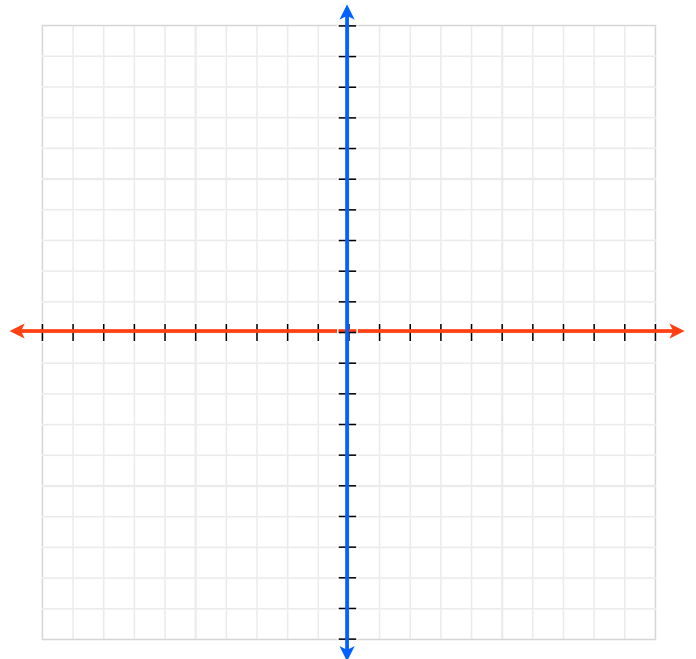
$$y = \frac{1}{3}^{(x+1)}$$

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

$$y = \frac{1}{4}^{(x-1)} + 2$$

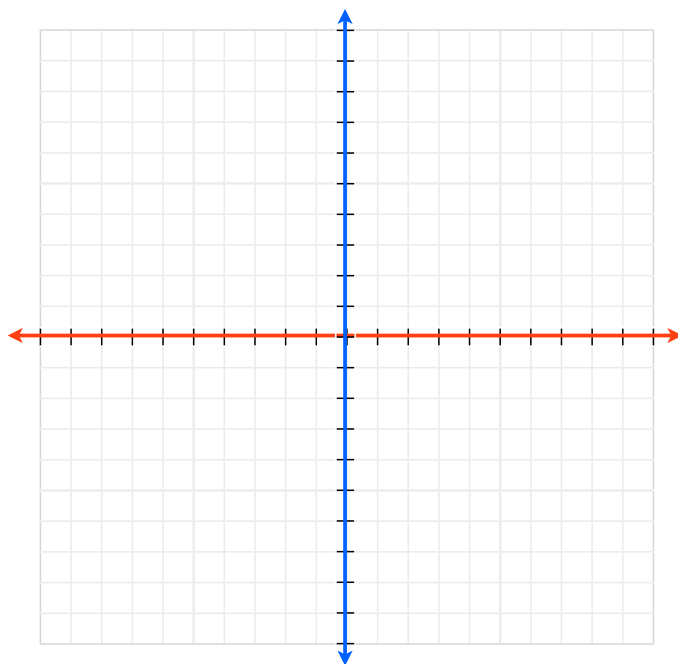
Graph the following exponential equation

$$y = \left(\frac{1}{2}\right)^{(x-2)} - 5$$



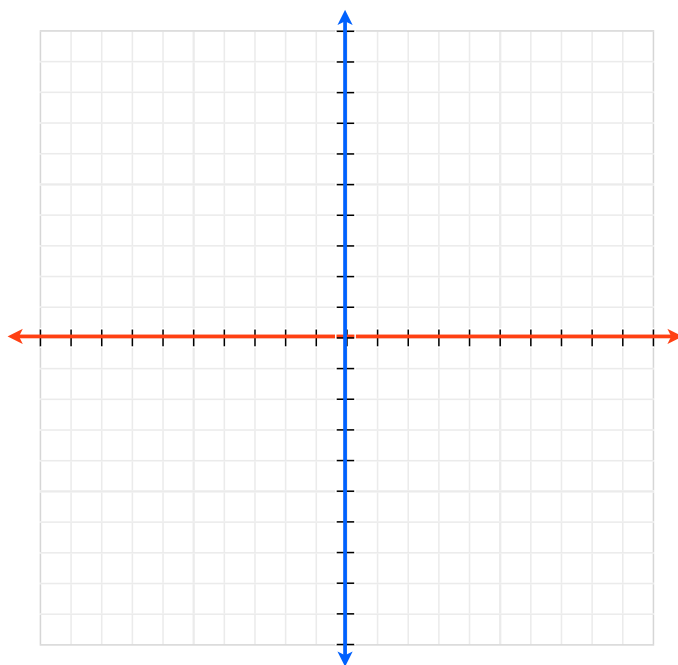
Graph the following exponential equation

$$y = 2\left(\frac{1}{2}\right)^{(x+1)} + 3$$



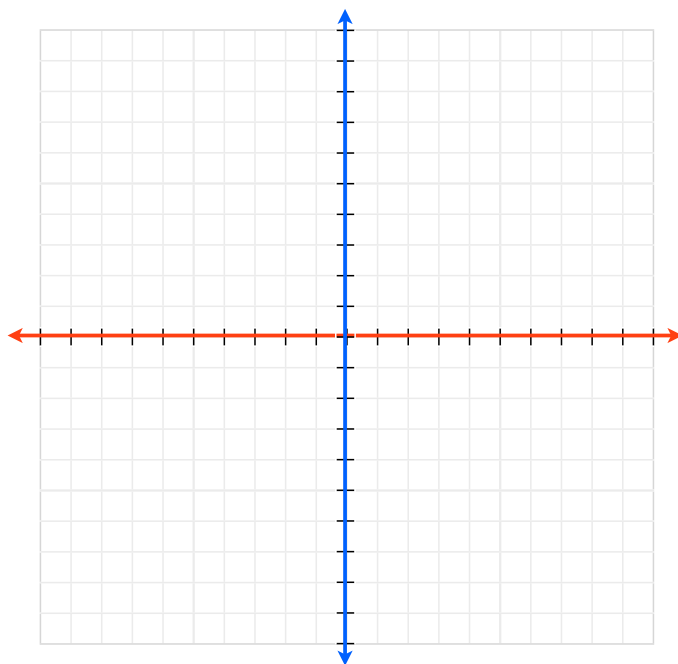
Graph the following exponential equation

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



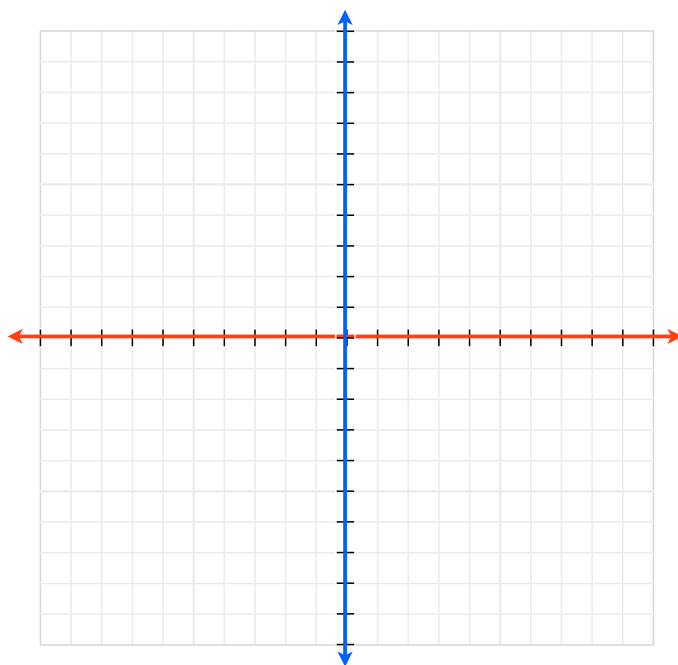
Graph the following exponential equation

$$y = -1\left(\frac{1}{2}\right)^{(x+2)} + 6$$



Graph the following exponential equation

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



Exponential Equation

$|a|$ stretches or compresses graph
if $a < 0$, reflection over horizontal asymptote

h gives the horizontal translation
 $h > 0$ shifts right; $h < 0$ shifts left

$$y = a \cdot b^{(x - h)} + k$$

base of exponential equation
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