

Write an exponential function  $y = ab^x$  for a graph that includes the given points:

(3, 54) and (6, 182.25)

$$y = 16(1.5)^x$$

$$54 = ab^3$$

Solve one equation for  $a$  then substitute into the other equation to find  $b$ .

$$a = \frac{54}{b^3} = \frac{54}{(1.5)^3} = 16$$

$$182.25 = ab^6$$

$$182.25 = \frac{54}{b^3} b^6$$

$$182.25 = 54b^3$$

$$\frac{182.25}{54} = b^3$$

$$3.375 = b^3$$

$$b = 1.5$$

Take a small white board, a marker, and a rag.

Find the base of an exponential function for each situation.

1. Increase of 12.1%

$$b = 1.121$$

$$100 + 12.1$$

$$112.1$$

2. Decrease of 0.72%

$$b = 0.9928$$

$$100 - .72$$

$$99.28$$

3. The number of internet users triples.

$$b = 3$$

For each exponential equation state the percent change it models and state if it's an increase or a decrease.

1.  $y = 225(1.207)^x$

$$\times 100 = 120.7\%$$

20.7% inc

2.  $y = 1.58(0.8101)^x$

$$\times 100$$

$$81.01\% \rightarrow 18.99\%$$

dec

Does each Exponential Function represent Growth or Decay?

1.  $y = 2875(1.0012)^x$

G

2.  $y = 72.8(0.9918)^x$

D

3.  $y = 4\left(\frac{57}{61}\right)^x$

D

4.  $y = 100(0.6137)^{-x}$

G

5.  $y = 562\left(\frac{112}{109}\right)^x$

G

Hwk #9

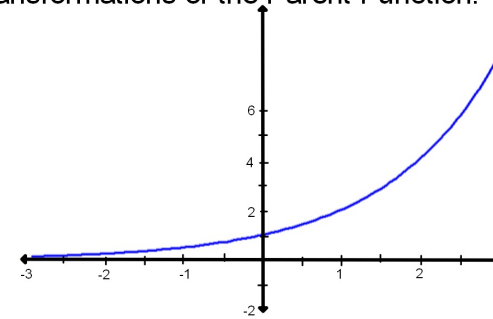
Sec 8-1

Pages 434-436

Problems 9, 16, 17, 23, 35, 37, 38, 49, 50, 56

Due Thursday

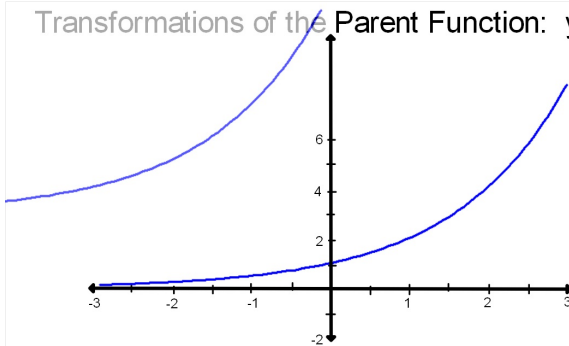
Transformations of the Parent Function:  $y = 2^x$



What is the horizontal Asymptote of this function?

$$y = 0$$

Transformations of the Parent Function:  $y = 2^x$

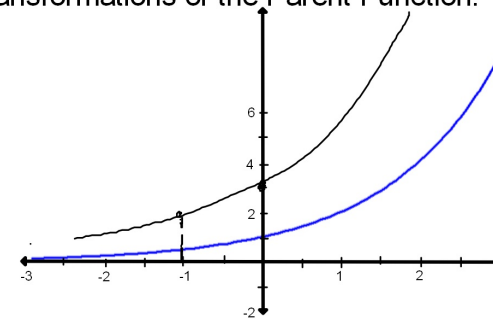


What would the graph of the function below look like?

$$y = 2^{x+3} + 4$$

Horizontal translation 3 units left  
Vertical translation 4 units up

Transformations of the Parent Function:  $y = 2^x$

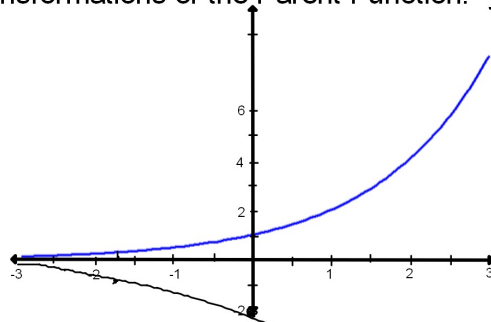


What would the graph of the function below look like?

$$y = 3 \cdot 2^x$$

Vertical Stretch Factor=3  
"3-times taller"

Transformations of the Parent Function:  $y = 2^x$

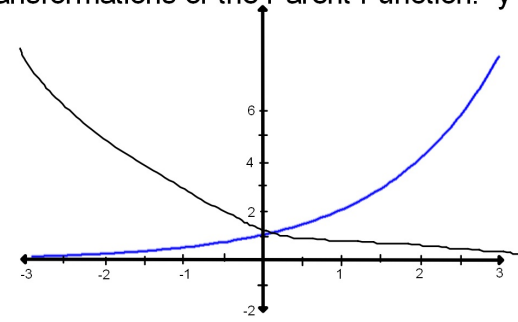


What would the graph of the function below look like?

$$y = -2 \cdot 2^x$$

Vertical Stretch Factor = 2 and x-axis reflection ("upside down")

Transformations of the Parent Function:  $y = 2^x$



What would the graph of the function below look like?

$$y = 2^{-x}$$

Y-axis reflection ("backwards")

Find the equation of the inverse for this function:

$$y = \sqrt{\frac{4x^3 - 7}{8}} + 1$$

$$\sqrt[3]{\frac{(x-1)^2 + 7}{4}}$$

1. 1
2.  $\sqrt{\quad}$
3. 8
4. 7
5. 4
6. 3