

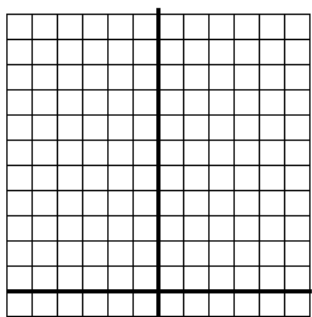
4.4 Graphing Exponentials (A.CED.2)
(A.REI.10)

Use the following exponential functions to create a table and graph, find the y-intercept and end behavior, then find the asymptote. Decide if the given point is a solution.

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

(-3,8)

x	f(x)
-2	
-1	
0	
1	
2	



y-intercept: (,)

As $x \rightarrow \infty$ $y \rightarrow$ _____.

As $x \rightarrow -\infty$ $y \rightarrow$ _____.

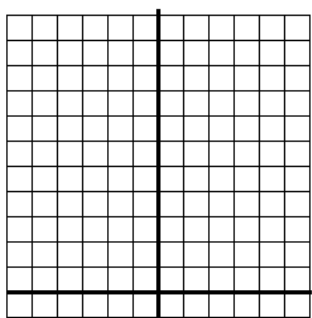
Increasing or decreasing?

Asymptote:

2. $f(x) = 2^x + 3$

(6,64)

x	f(x)
-2	
-1	
0	
1	
2	



y-intercept: (,)

As $x \rightarrow \infty$ $y \rightarrow$ _____.

As $x \rightarrow -\infty$ $y \rightarrow$ _____.

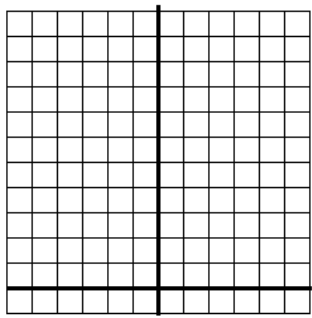
Increasing or decreasing?

Asymptote:

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

(15,-4)

x	f(x)
-2	
-1	
0	
1	
2	



y-intercept: (,)

As $x \rightarrow \infty$ $y \rightarrow$ _____.

As $x \rightarrow -\infty$ $y \rightarrow$ _____.

Increasing or decreasing?

Asymptote:

Use the previous questions and the example to answer the following questions.

Use the equation $f(x) = \left(\frac{1}{3}\right)^x - 2$

4. How would you know what the y-intercept will be just from looking at the equation? Why?

5. How would you know what the asymptote will be just from looking at the equation? Why?

6. How can you tell, from the equation, if the graph will be increasing or decreasing? Why?

Answer the questions about the following exponential functions.

7. $f(x) = \left(\frac{1}{3}\right)^x$

- a) What is the base?
- b) Is the function increasing or decreasing?
- c) What is the asymptote?
- d) What is the y-intercept?

8. $f(x) = 5^x + 4$

- a) What is the base?
- b) Is the function increasing or decreasing?
- c) What is the asymptote?
- d) What is the y-intercept?

9. $f(x) = \left(\frac{2}{7}\right)^x - 12$

- a) What is the base?
- b) Is the function increasing or decreasing?
- c) What is the asymptote?
- d) What is the y-intercept?