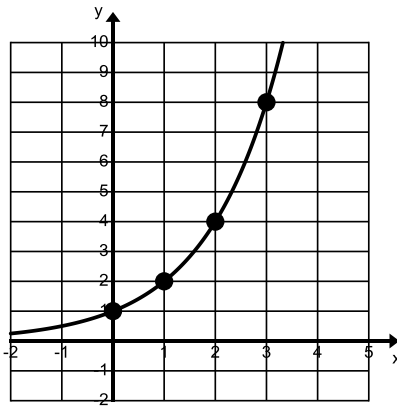


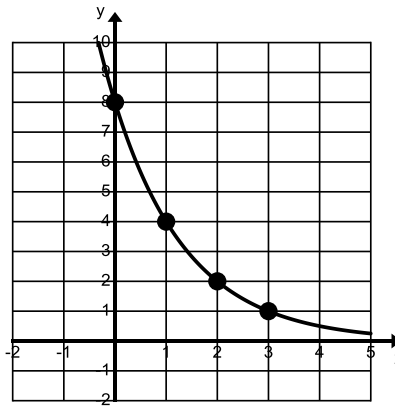
Determine the Exponential Equation,  $f(x) = a \cdot b^x$ , for each of the following graphs.

- 1) Determine that value of  $a$  in our equation by where the function passes through the y-axis.
- 2) Pick a second point on the function line. This will be the  $(x, f(x))$  values for the function.
- 3) Solve for  $b$ .

Example 1.



Example 2.



$f(x) =$


$f(x) =$


Given the previous two examples, we now next look at the rate of change or slope between two individual points on our graphs.

Example 1:

$x = \{0, 1\}$ ; rate of change =

$x = \{1, 2\}$ ; rate of change =

$x = \{2, 3\}$ ; rate of change =

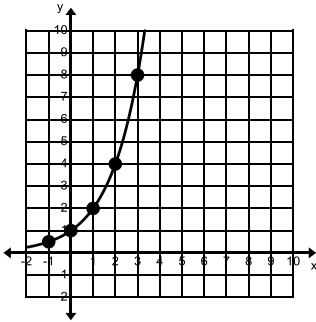
Example 2: Which one will have a greater rate of change?

$x = \{0, 3\}$ ; rate of change =

$x = \{1, 2\}$ ; rate of change =

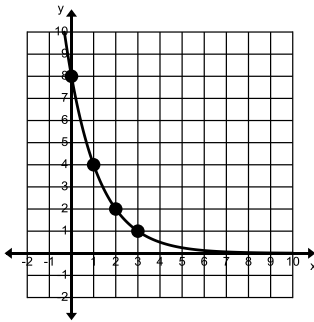
Determine the Exponential Equation,  $f(x) = a \cdot b^x$ , for each of the following graphs.

1)



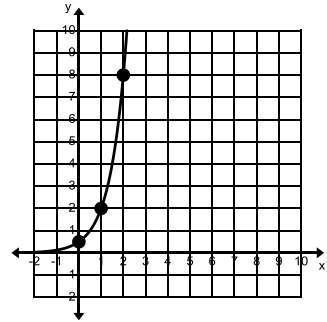
$f(x) =$


2)



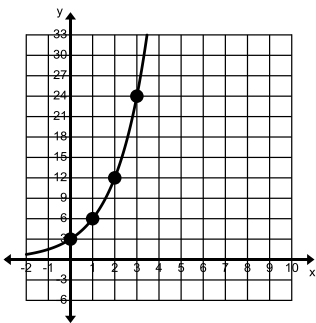
$f(x) =$


3)



$f(x) =$


Given the following Exponential Equations, find the rate of change between the given x intervals. Which x intervals produce the greatest rate of change?



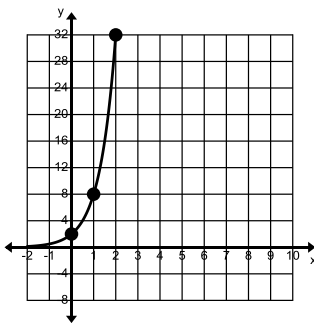
4)  $f(x) =$

x	f(x)
0	3
1	6
2	12
3	24

$x = \{0, 1\}$ ; rate of change =

$x = \{2, 3\}$ ; rate of change =

5)  $f(x) =$

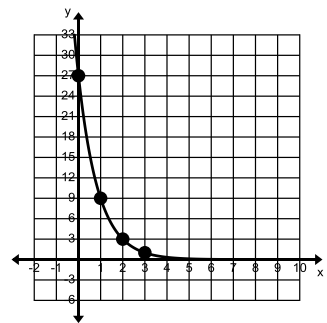


x	f(x)
0	2
1	8
2	32
3	128

$x = \{0, 2\}$ ; rate of change =

$x = \{1, 3\}$ ; rate of change =

6)  $f(x) =$



x	f(x)
0	27
1	9
2	3
3	1

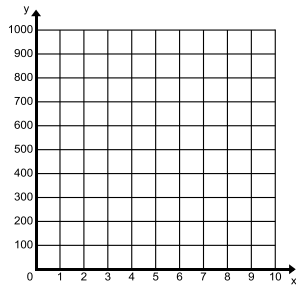
$x = \{0, 3\}$ ; rate of change =

$x = \{1, 2\}$ ; rate of change =

Review:

7. You plan on saving money for college. You start when you are 8 years old with \$500 that you earned during the summer. You plan on earning 8% per year on your investment. What is the exponential function that shows how much you will make? Complete the table and graph. How much money will you have after 5 years? 8 years? 10 years?

$t$	$f(t)$
0	
1	
2	
3	



$$f(x) =$$

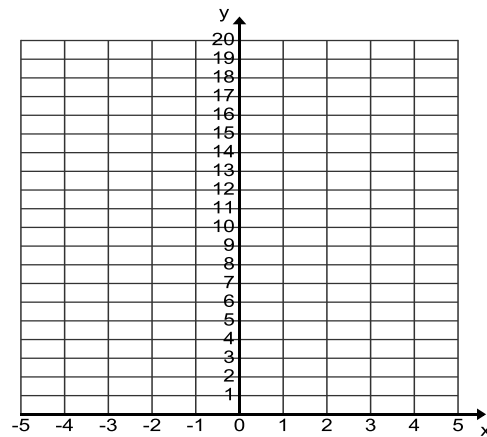
$$f(5) =$$

$$f(8) =$$

$$f(30) =$$

8.) Fill in the function table and plot the points, connect the points in order. Show your work!

$x$	$f(x) = 16 \cdot \left(\frac{1}{2}\right)^x + 3$	$f(x)$	$(x, f(x))$
-1			
0			
1			
2			
3			
4			



**Determine if the functions are increasing or decreasing. Then state the location of the asymptote.**

9.)  $f(x) = 2^x - 7$

Growth or Decay

asymptote (k value): \_\_\_\_\_

10.)  $f(x) = \frac{2}{3} \cdot 5^x + 4$

Growth or Decay

asymptote (k value):: \_\_\_\_\_

11.)  $f(x) = 8 \cdot 4^x - \frac{1}{4}$

Growth or Decay

asymptote (k value):: \_\_\_\_\_

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

Growth or Decay

asymptote (k value): \_\_\_\_\_