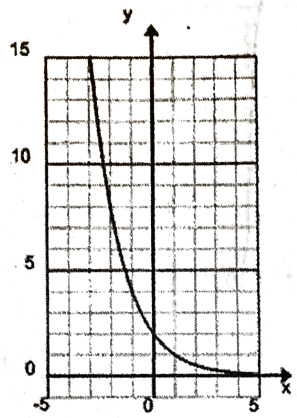
Key

Exponentials Quiz 1 Classwork Review

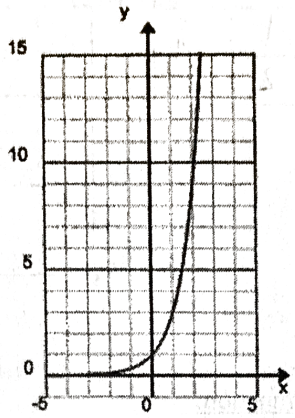
Match each equation with a graph:

1. $y = 3^x$ B 2. $y = \frac{1}{2}(2)^x$ C 3. $y = 3(2)^x$ D 4. $y = 2\left(\frac{1}{2}\right)^x$ A

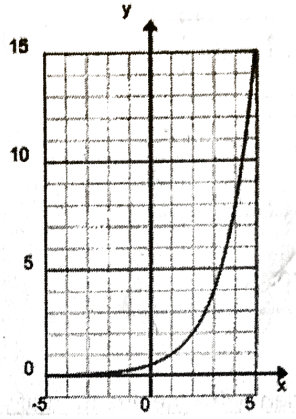
A



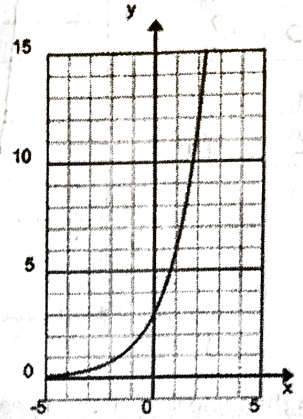
B



C



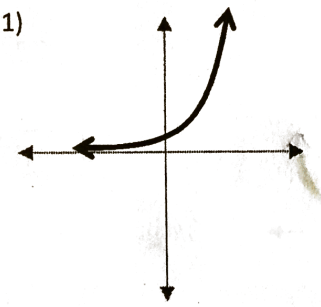
D



6. Exponential Graphs Task – Analyzing the Shape

Remember, the general form of an exponential function **is $f(x) = a \cdot b^x$.** For each graph shape below, describe what values of **a** and what values of **b** would make that shape of graph. Explain your reasoning.

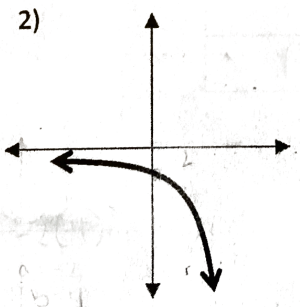
1)



a must be positive
b must be b>1

Explain:
a is positive b/c the y-intercept is positive
b is >1 because the graph is increasing over time

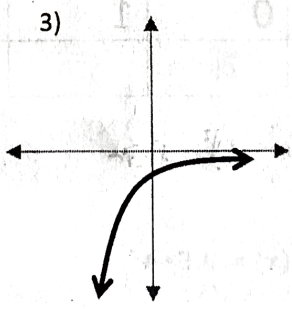
2)



a must be negative
b must be b>1

Explain:
a is negative because the y-intercept is negative
- because you are getting more negative over time
- it's a reflection of #1 over the x-axis

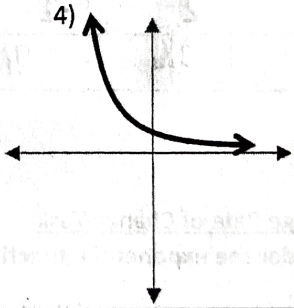
3)



a must be negative
b must be 0<b<1

Explain:
a is negative because the y-intercept is negative
- because it is getting closer x-axis as the xs get bigger
- a reflection of #4 over the x axis

4)



a must be Positive
b must be 0<b<1

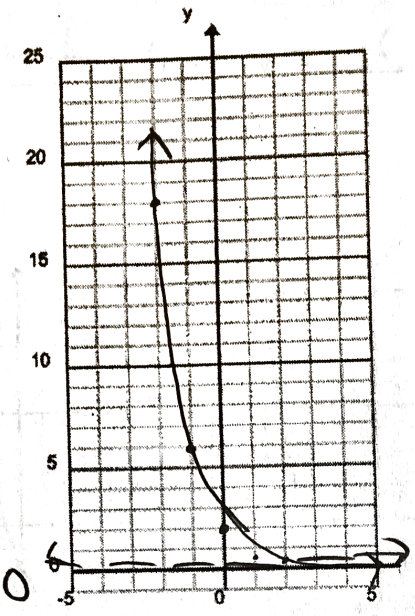
Explain:
a is positive because the y-intercept is positive
b is a fraction because the function is decreasing over time

Name Key

Fill in each table and graph the function, include the asymptote.

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

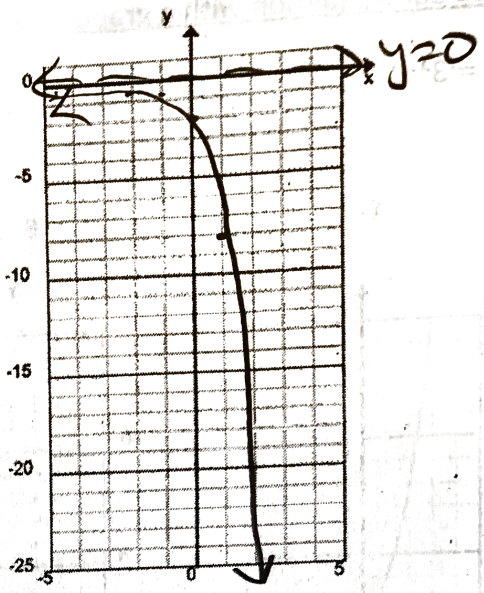
x	y
-2	18
-1	6
0	2
1	2/3
2	2/9



y=0

$y = -2 \cdot 4^x$

x	y
-2	-1/8
-1	-1/2
0	-2
1	-8
2	-32



Fill in the table so that it is linear. Then write the equation of your function.

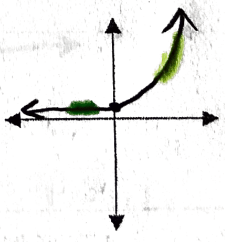
x	-4	-2	0	2	4
y	2	4	6	8	10

$y = 6 + x$

Fill in the table so that it is exponential. Then write the equation of your function.

x	-2	-1	0	1	2
y	2/9	2/3	2	3	9

$y = 2 \cdot 3^x$



Average Rate of Change Task

Consider the exponential function $f(x) = 0.5 \cdot 4^x$

1) Draw a very rough sketch of what you would expect this graph to look like:

2) a. Choose an interval where you would expect the average rate of change to be a very high number:

10 ≤ x ≤ 11

b. Now calculate the average rate of change for this interval. (10, 524288) (11, 2097152)

1,572,864

3) a. Choose an interval where you would expect the average rate of change to be a very low number (like, less than 1):

-2 ≤ x ≤ -1

(-2, .03125) (-1, .125)

b. Now calculate the average rate of change for this interval.

.09375

Name_____

Exponentials Quiz 1 Review Worksheet

1. Be able to identify an exponential function from a table.
2. Be able to write equations for linear and exponential functions from a table.
3. Be able to graph exponential functions and give the domain, range, and asymptote.
4. Be able to calculate the average rate of change.

Tell whether the ordered pairs satisfy an exponential function. Explain your answer.

1.

x	y
–4	1.5
–3	3
–2	6
–1	12

_____

2.

x	y
1	1
2	2
3	6
4	24

_____

3.

x	y
–2	–2
–1	–10
0	–50
1	–250

_____

4. {(1,10), (2, 20), (3, 40), (4, 80)} _____

_____

5. {(1,5), (2, 10), (3, 15), (4, 20)} _____

_____

r 6-11,

1. Is it Linear or Exponential?

2. Write the Equation for the Table

6.

x	y
–4	16
–3	20
–2	24
–1	28

_____

7.

x	y
-2	2/3
-1	2
0	6
1	18

_____

8.

x	y
–2	100
–1	10
0	1
1	1/10

_____

9.

x	y
–2	9
–1	18
0	27
1	36

_____

10.

x	y
0	2
1	11
2	60.5
3	332.75

_____

11.

x	y
2	6
3	10
4	14
5	18

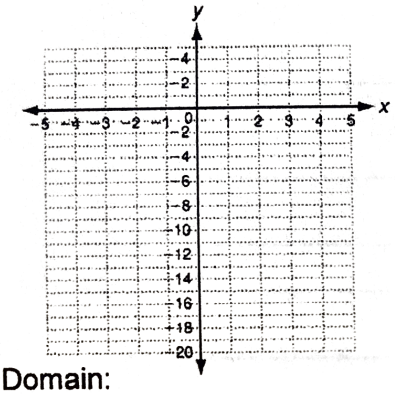
_____

Name_____

Graph the Following Functions.

12. $y = -4(2)^x$

x	y
−2	
−1	
0	
1	
2	



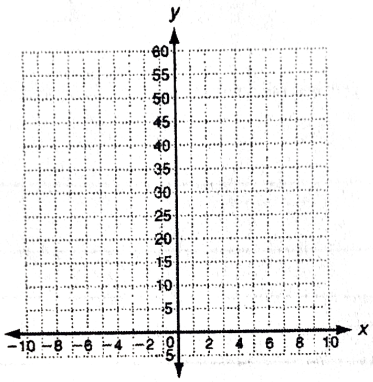
Domain:

Range:

Asymptote:

13. $y = 2(5)^x$

x	y
−2	
-1	
0	
1	
2	



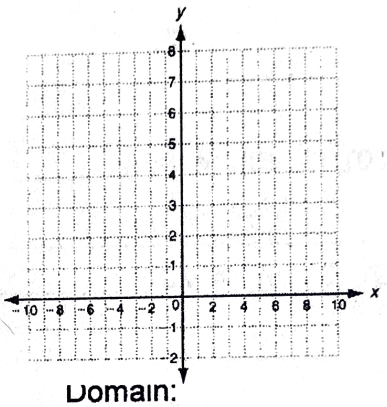
Domain:

Range:

Asymptote:

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

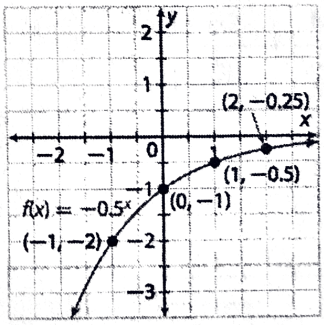
x	y
−2	
-1	
0	
1	
2	



Domain:

Range:

Asymptote:

Equation	Table	Graph
$f(x) = 4(2)^x$ Find the average rate of change on the interval $-1 \leq x \leq 1$ Find the average rate of change on the interval $2 \leq x \leq 4$	x | f(x) 0 | 5 1 | 10 2 | 20 3 | 40 4 | 80 Find the average rate of change on the interval $0 \leq x \leq 2$	 Find the average rate of change on the interval $-1 \leq x \leq 1$