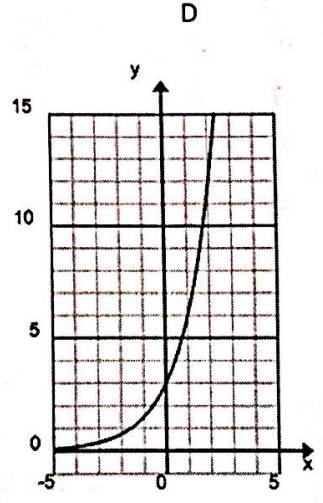
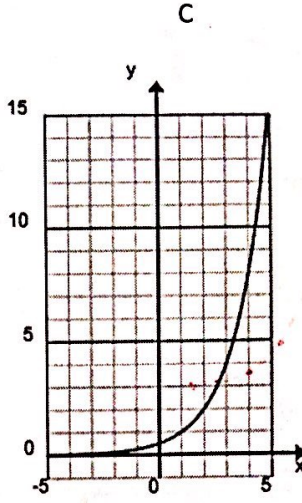
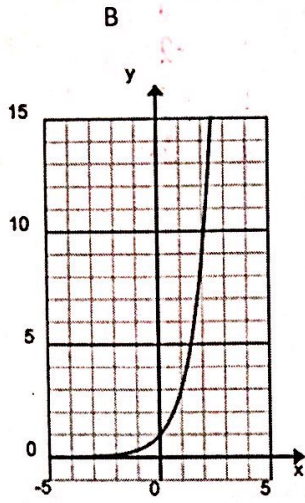
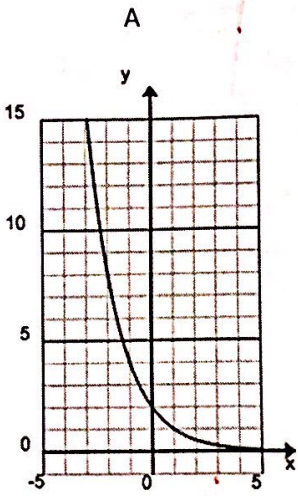


Exponentials Quiz 1 Classwork Review

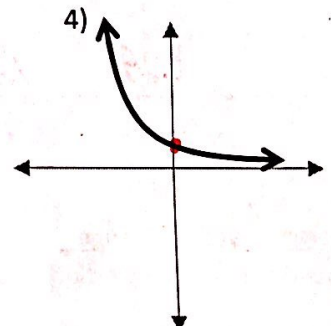
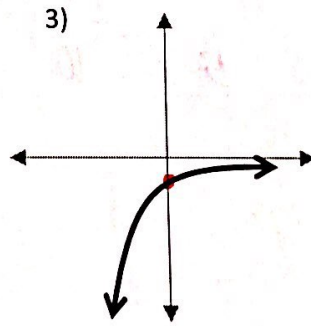
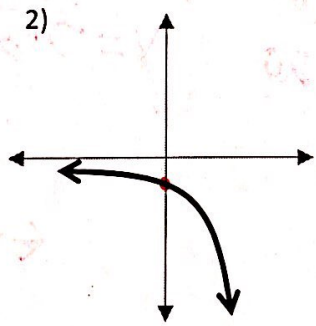
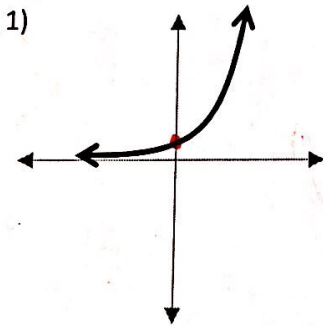
Match each equation with a graph:

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



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.



a must be positive
 b must be greater than 1

Explain:

The y-intercept is shown to be positive, and since the graph is increasing, you must be multiplying by a number greater than 1.

a must be negative
 b must be greater than 1

Explain:

a must be negative
 b must be less than 1

Explain:

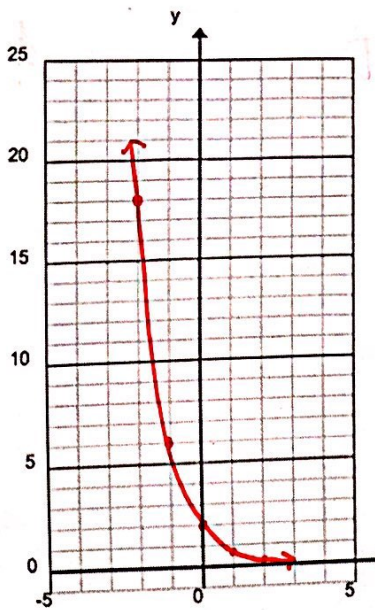
a must be positive
 b must be less than 1

Explain:

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

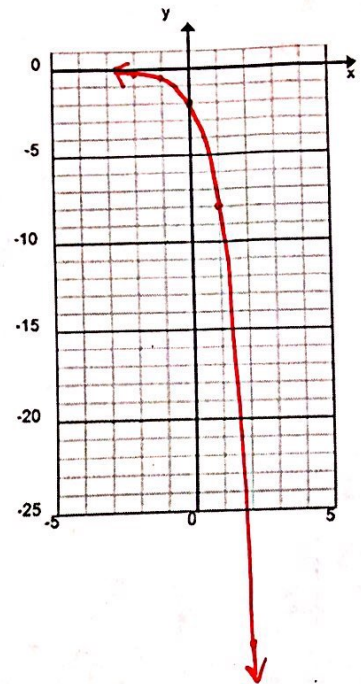
$$f(x) = 2 \cdot \left(\frac{1}{3}\right)^x$$

x	y
-2	18
-1	6
0	2
1	$\frac{2}{3}$
2	$\frac{2}{9}$



$$y = -2 \cdot 4^x$$

x	y
-2	$-\frac{1}{8}$
-1	$-\frac{1}{2}$
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	10	12	14	16	18

$$\frac{2}{2} = 1$$

$$y = 1x + 14$$

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

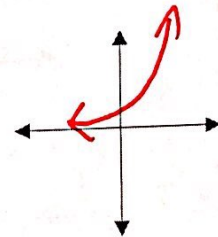
x	-2	-1	0	1	2
y	1.25	2.5	5	10	20

$$y = 5 \cdot 2^x$$

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:

$$1 \leq x \leq 3$$

$$f(1) = 0.5 \cdot 4^1 = 2$$

$$f(3) = 0.5 \cdot 4^3 = 32$$

$$\frac{32 - 2}{3 - 1} = \frac{30}{2} = 15$$

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

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

$$-2 \leq x \leq -1$$

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

$$f(-2) = 0.5 \cdot 4^{-2} = 0.5 \cdot \frac{1}{16} = \frac{1}{32}$$

$$f(-1) = 0.5 \cdot 4^{-1} = \frac{1}{2} \cdot \frac{1}{4} = \frac{1}{8}$$

$$\frac{\frac{1}{8} - \frac{1}{32}}{-2 - (-1)} = \frac{\frac{1}{32} - \frac{4}{32}}{-1} = \frac{-\frac{3}{32}}{-1} = \frac{3}{32}$$