

NAME: \_\_\_\_\_

*P.I. A.G.4: Identify and graph exponential functions*

1. Write an equation in the form  $f(x) = ab^x$  with base 2, passing through the point (4, 4).

[A]  $f(x) = \frac{1}{4} \cdot 4^x$       [B]  $f(x) = \frac{1}{4} \cdot 2^x$

[C]  $f(x) = 2 \cdot 2^x$       [D]  $f(x) = 2 \cdot 4^x$

[1] \_\_\_\_\_

2. Write an equation in the form  $y = ab^x$  with base 3, passing through the point (5, 2).

[2] \_\_\_\_\_

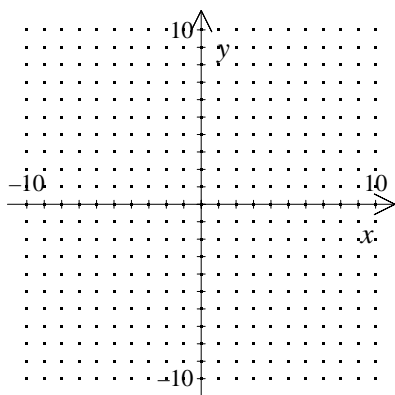
3. Use a graphing calculator to graph the function  $y = 0.2^x$  over the domain  $\{-3 \leq x \leq 1\}$ .

[3] \_\_\_\_\_

4. Use a graphing calculator to graph the function  $y = 2(1.15)^x$ . Find the smallest integral value of  $x$  such that  $y \geq 4$ .

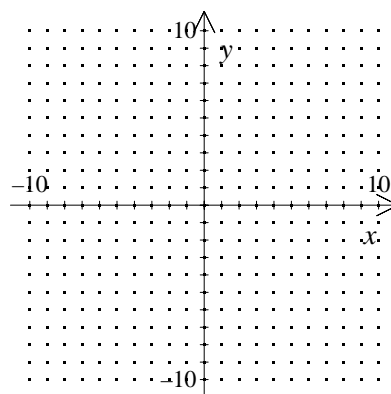
[4] \_\_\_\_\_

5. Graph the function:  $f(x) = 3^x$



[5] \_\_\_\_\_

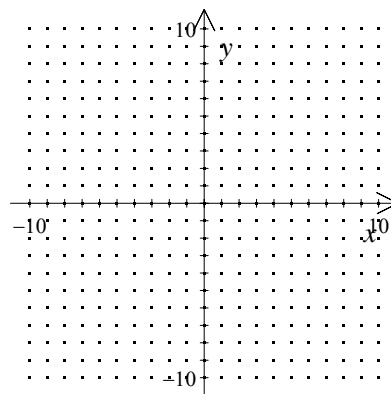
6. Graph the function:  $y = 2^x - 5$



[6] \_\_\_\_\_

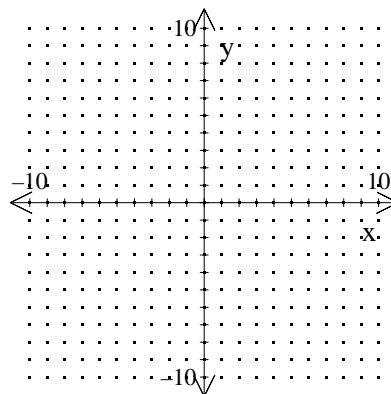
7. Graph using a graphing calculator. Sketch and describe your results.

$y = 5^x - 3$



[7] \_\_\_\_\_

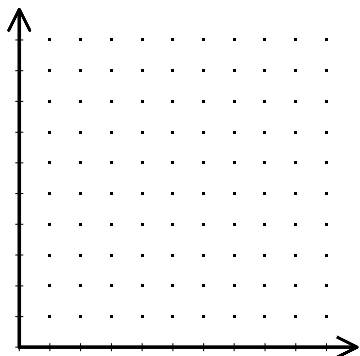
8. Write two exponential functions that describe growth. Graph them and tell which grows faster.



[8] \_\_\_\_\_

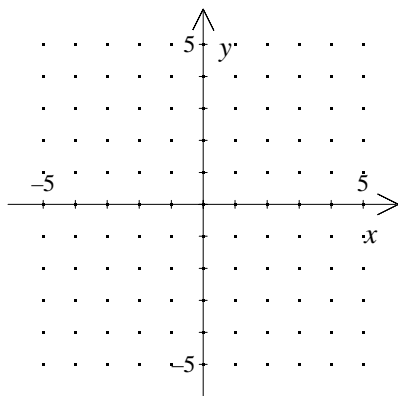
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9. Graph the function that shows the growth in an account in which \$20,000 is compounded quarterly at 8% interest. In how many years will the account double the initial investment?



[9] \_\_\_\_\_

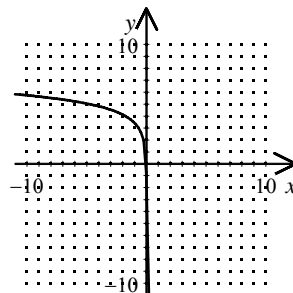
10. Graph the function and label as exponential growth or decay.  $y = 5 \cdot 0.4^x$



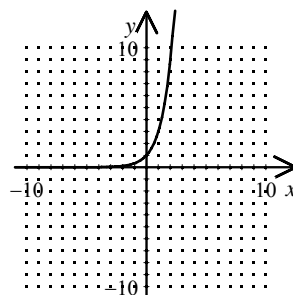
[10] \_\_\_\_\_

11. Graph the function:  $f(x) = \left(\frac{1}{3}\right)^x$

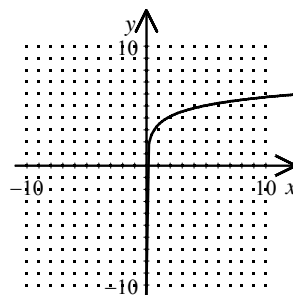
[A]



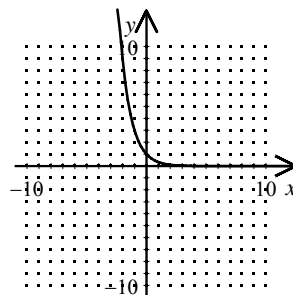
[B]



[C]



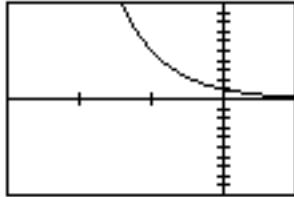
[D]



[11] \_\_\_\_\_

[1] B

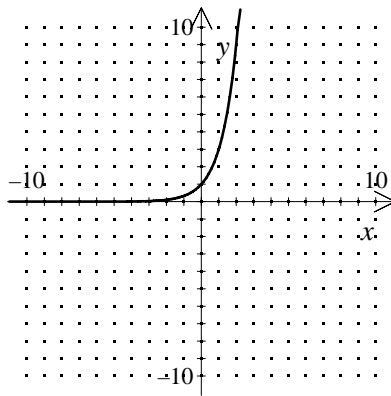
[2]  $y = \frac{2}{243} \cdot 3^x$



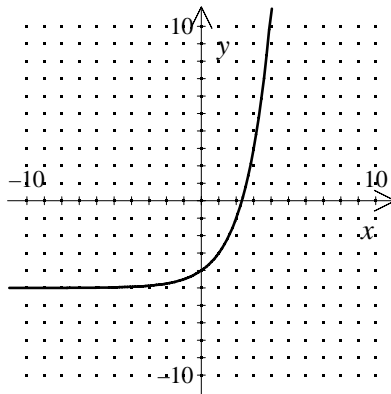
RANGE  
Xmin=-3  
Xmax=1  
Xscl=1  
Ymin=-10  
Ymax=10  
Yscl=1  
Xres=1

[3] \_\_\_\_\_

[4]  $x = 5$



[5] \_\_\_\_\_



[6] \_\_\_\_\_

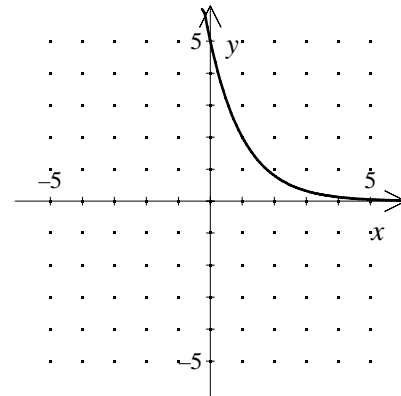
Crosses the y-axis at  $-2$ , crosses the x axis at  $0.68$ ; increases exponentially, passes through the point  $(1, 2)$  and the point  $(2, 22)$ . Check

[7] students' sketches.

Answers may vary. Sample:  $y_1 = 4(1.2)^x$  and

[8]  $y_2 = 4(1.8)^x$ ;  $y_2$  grows faster

[9]  $8.75 \approx 9$  years



[10] exponential decay

[11] D