

4-3 Graphing Exponentials

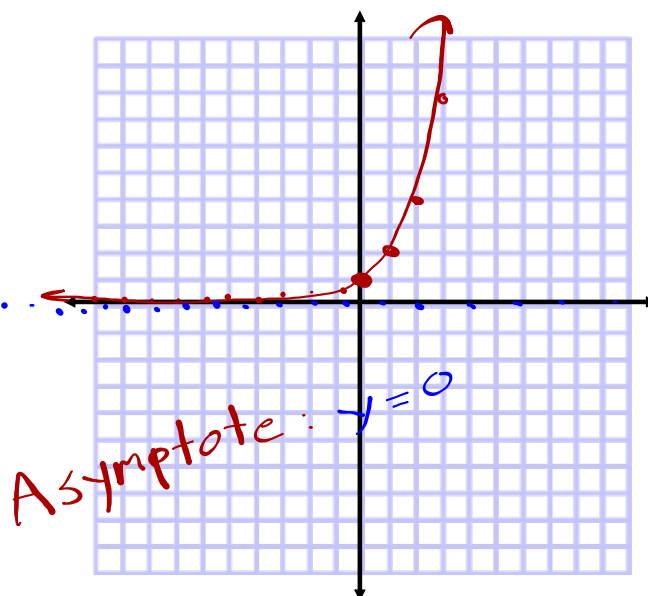
4-3a: I can graph exponential functions using transformations and points.

4-3b: I can identify the asymptote of an exponential function.

Jun 3-2:48 PM

Recall the graph of $f(x)=2^x$.

x	$f(x)=2^x$
-3	
-2	$\frac{1}{4}$
-1	$\frac{1}{2}$
0	1
1	2
2	4
3	

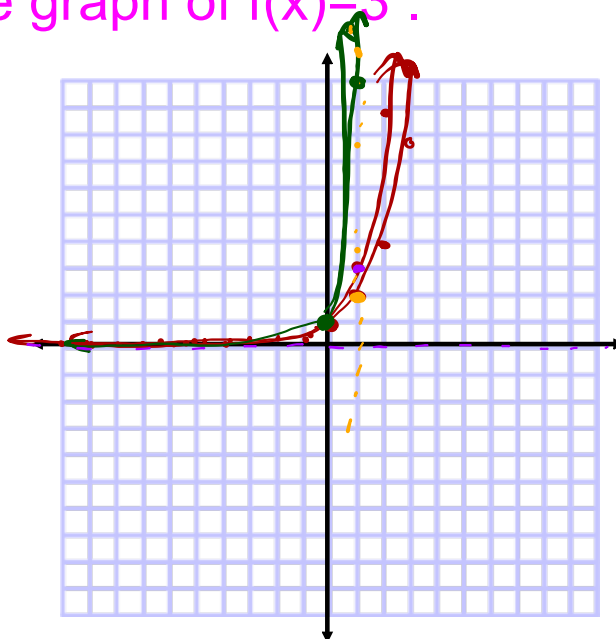


Vocab: Asymptote

Oct 26-7:05 AM

Now consider the graph of $f(x)=3^x$.

x	$f(x)=3^x$
-3	
-2	$\frac{1}{9}$
-1	$\frac{1}{3}$
0	1
1	3
2	
3	



What do you notice about the y-intercepts?

(when $x = 0$)

$(0, 1)$ every time!

What happens when $x = 1$? (If you can't see the pattern after 2^x and 3^x try looking at 4^x too.)

$(1, \text{base})$ every time!

Where is the asymptote for these graphs?

$y = 0$

★ Key parts to all exponential parent graphs: ★

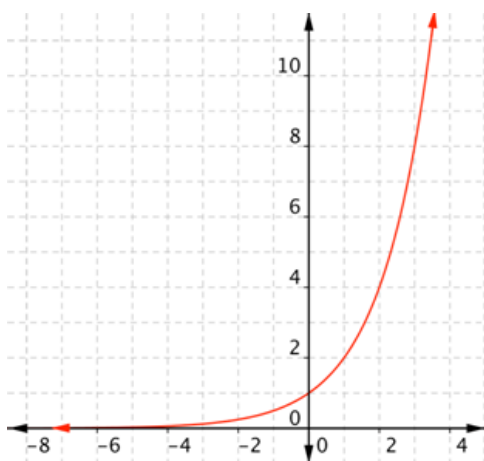
1) There is a point at $(0, 1)$.

2) There is a point at $(1, \text{base})$

3) There is a horizontal asymptote at $y = 0$.

★ These pieces will change with the transformations. ★

State the domain, range, increasing, decreasing, asymptote, and end behavior.



Domain:

Range:

Increasing:

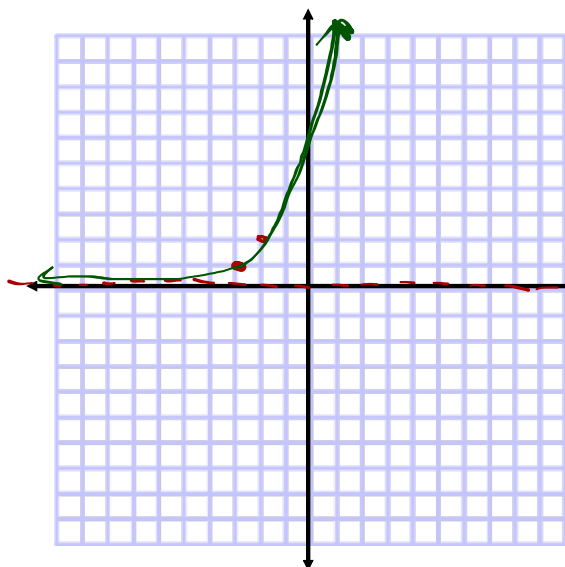
Decreasing:

Asymptote:

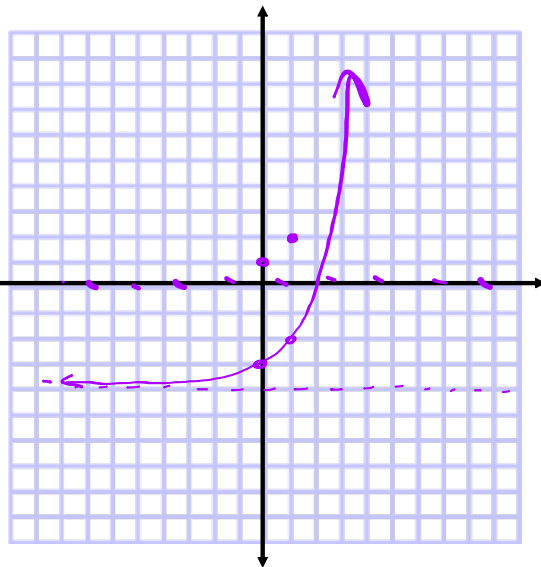
End Behavior:

Graph each function using transformations and points. Write the equation of the asymptote.

$$f(x) = 2^{x+3}$$



$$f(x) = 2^x - 4$$

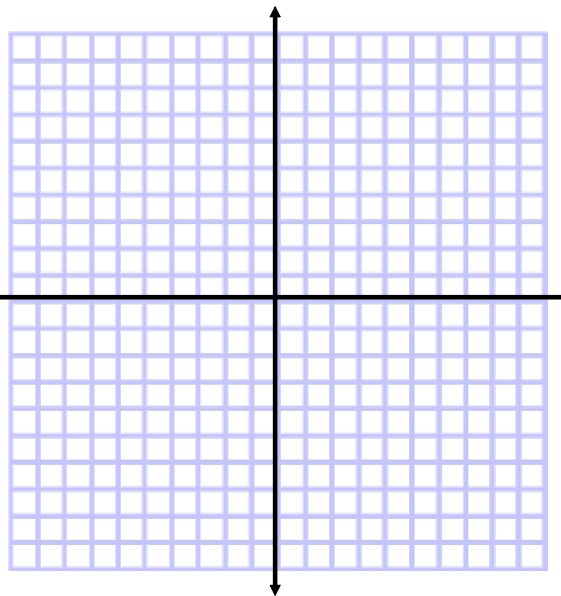
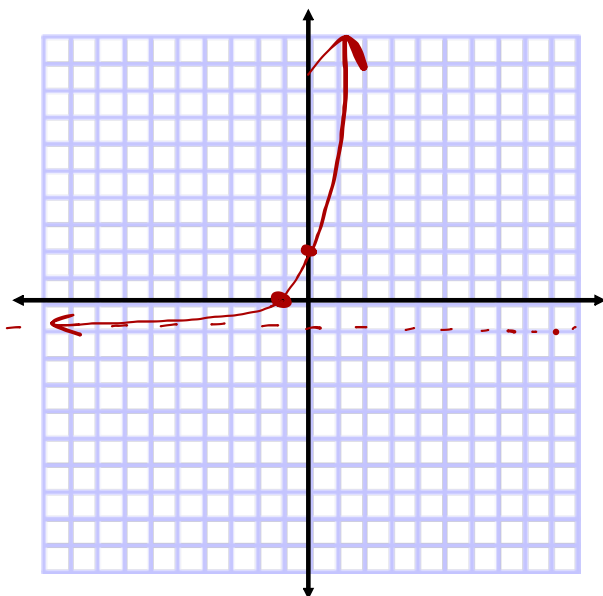


Dec 15-7:42 AM

Graph each function using transformations and points. Write the equation of the asymptote.

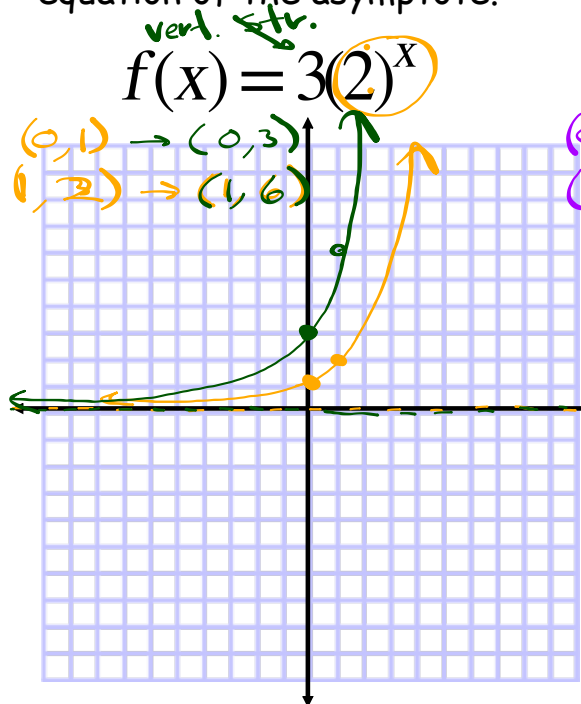
You try!

$$f(x) = 3^{x+1} - 1 \quad \text{left, down,} \quad f(x) = 4^{x-2} - 3$$

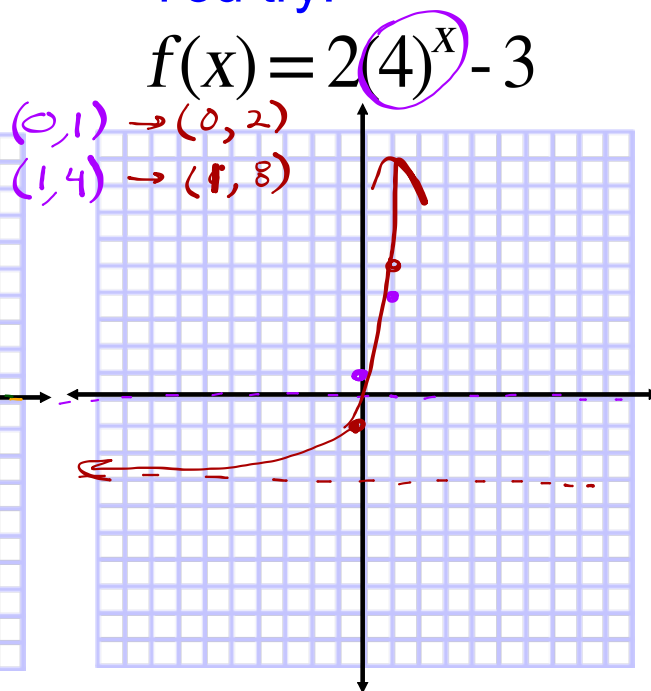


Oct 26-7:12 AM

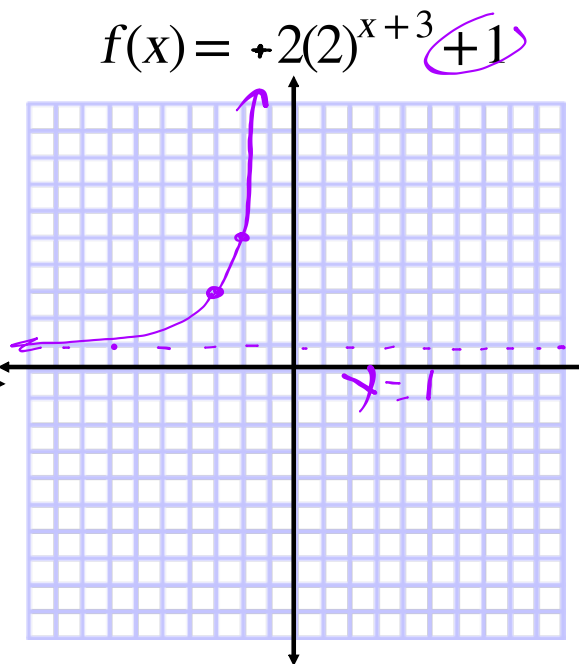
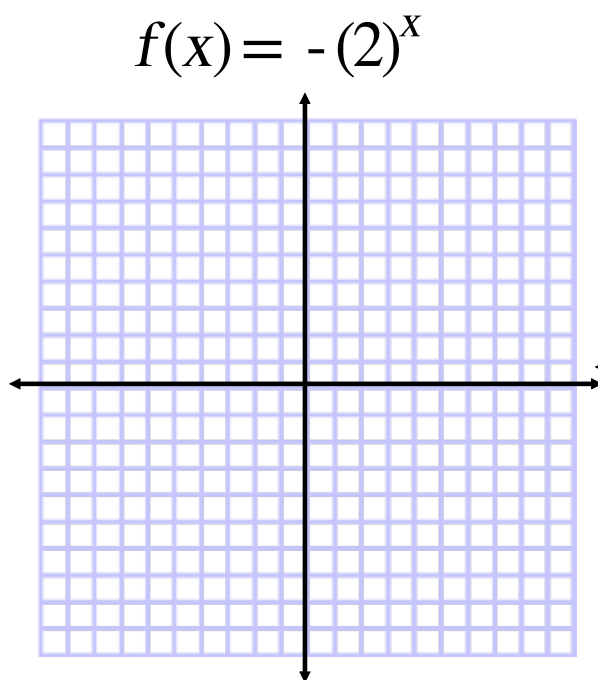
Graph each function using transformations and points. Write the equation of the asymptote.



You try!

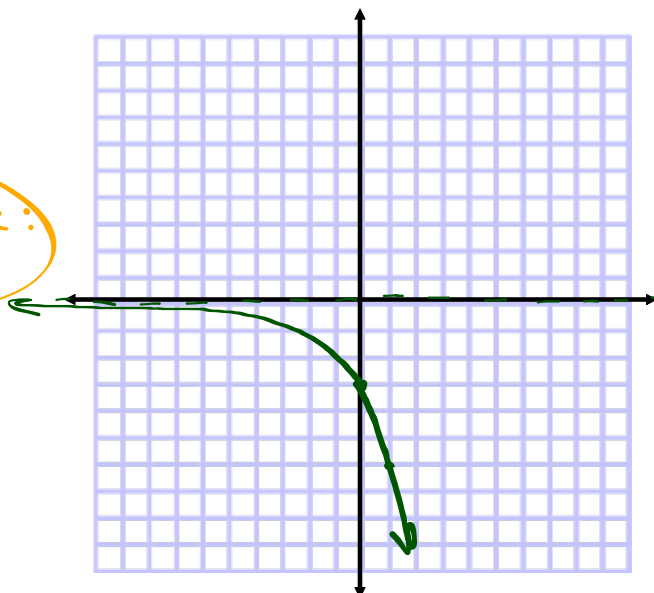


Graph each function using transformations and points. Write the equation of the asymptote.



#5)
 $f(x) = -3(2)^x$

asymptote:
 $y = 0$



$$f(x) = 2(5)^{x+1} - 4$$

Asymptote:
 $y = -4$

