

HAT

Exponential Functions

11/13/17

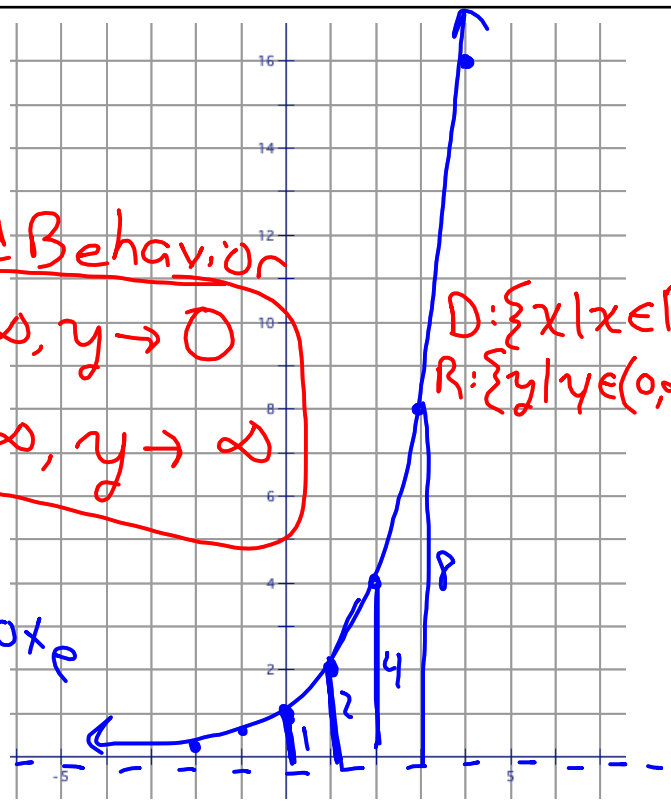
Warm Up: growth number $\frac{1}{2^1}$ $\frac{1}{2^2}$
 Graph $f(x) = 2^x$.
 State the domain and range.

x	y
-2	$\frac{1}{4}$
-1	$\frac{1}{2}$
0	1
1	2
2	4
3	8
4	16

End Behavior
 As $x \rightarrow -\infty, y \rightarrow 0$
 As $x \rightarrow \infty, y \rightarrow \infty$

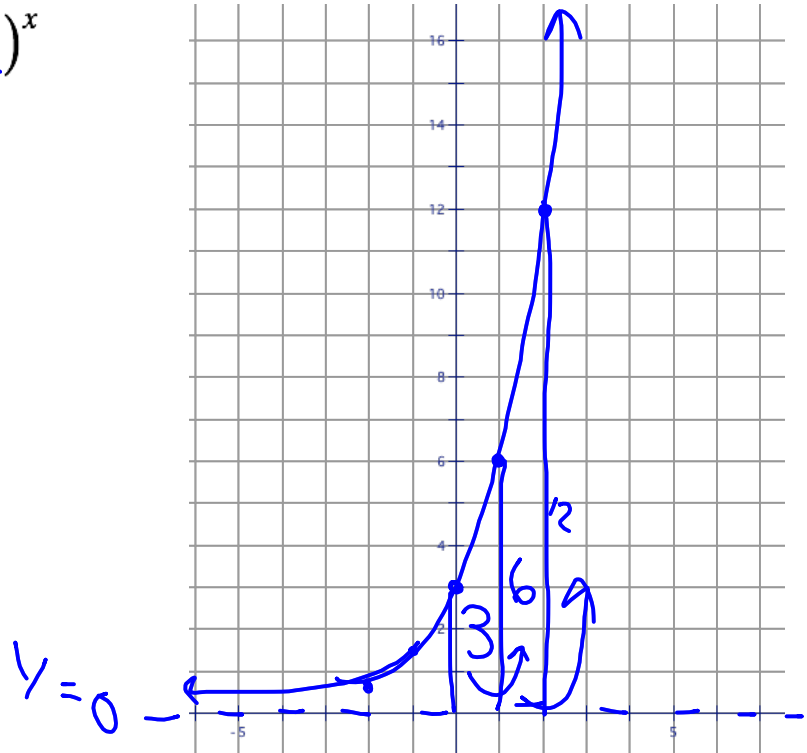
Asymptote
 $y = 0$

D: $\{x | x \in \mathbb{R}\}$
 R: $\{y | y \in (0, \infty)\}$



Ex#1: Graph $f(x) = 3(2)^x$

x	y
-2	$\frac{3}{4}$
-1	$\frac{3}{2}$
0	3
1	6
2	12
3	24



Ex#2: Graph $f(x) = 2\left(\frac{3}{2}\right)^x - 4$

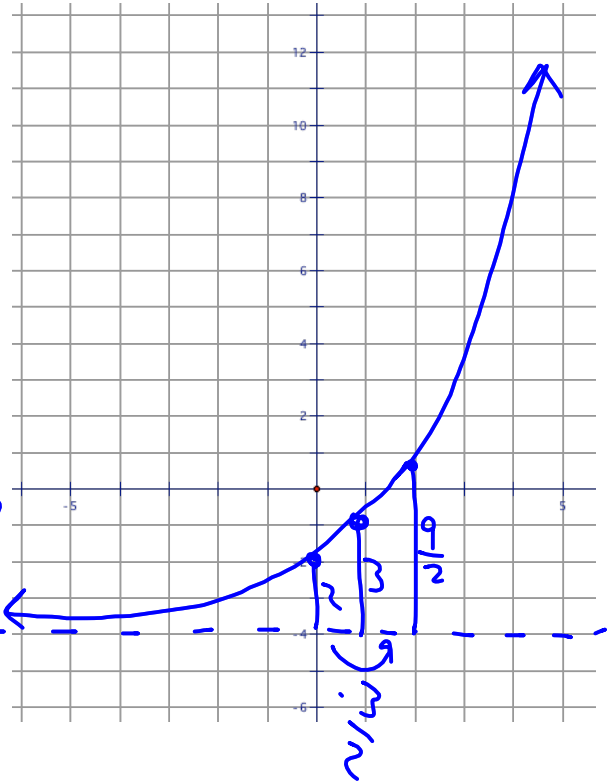
State the domain and range.

Write equations of all asymptotes.

$$D: \{x \mid x \in \mathbb{R}\}$$

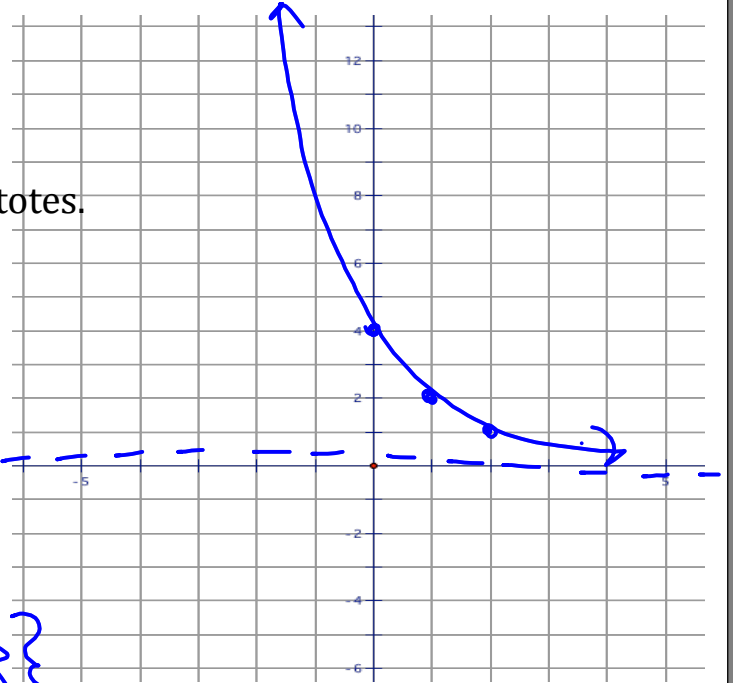
$$R: \{y \mid y \in (-4, \infty)\}$$

$$y = -4$$



Ex#3: Graph $f(x) = 4\left(\frac{1}{2}\right)^x$

State the domain and range.
Write equations of all asymptotes.



$0 < G.F. < 1$

$y = 0$

exponential decay

$$D: \{x \mid x \in \mathbb{R}\}$$

$$R: \{y \mid y \in (0, \infty)\}$$

Transformations of Exponential Functions

$$f(x) = ab^{x-h} + k$$

horizontal shift

initial Value

b is Growth Factor

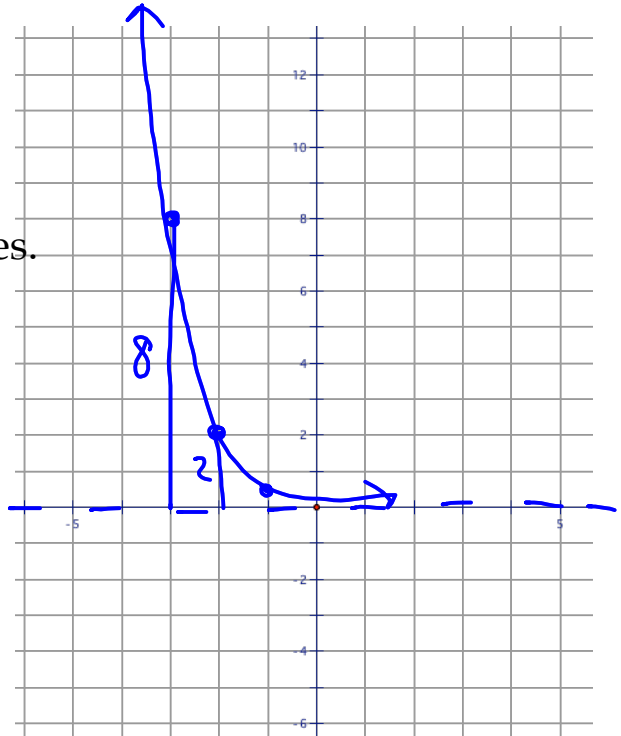
vert. shift
(moves asymptote)
 $y = k$

Ex#4: Graph $f(x) = 8\left(\frac{1}{4}\right)^{x+3}$

State the domain and range.

Write equations of all asymptotes.

$$y=0$$



Hey, students!

Go to student.desmos.com
and type in:

EESZQ

Assignment: page 456 #15, 19 - 23, 29, 33, 34, 36

