

Evaluate each exponential function for the stated value.

1. $f(x) = \frac{1}{3}(6)^x; x = 2$
 $f(2) = \frac{1}{3}(6)^2$
 $f(2) = 12$

2. $f(n) = 10(2)^n; f(-2)$
 $f(-2) = 10(2)^{-2}$
 $f(-2) = 2.5$

3. $y = 4 \cdot 2^x; x = 4$
 $y = 4 \cdot 2^4$
 $y = 64$

Answer the following word problems:

4. If a basketball is bounced from a height of 20 feet, the function $f(x) = 20(0.9)^x$ gives the height of the ball in feet of each bounce, where x is the bounce number. What will be the height of the 6th bounce? Round your answer to the nearest tenth of a foot.

$x =$ bounce number
 $x = \underline{6}$ (6th bounce)

$f(x) = 20(0.9)^x$
 $f(6) = 20(0.9)^6$
 $f(6) = 10.6$ feet

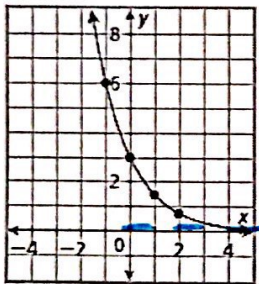
5. Suppose the depth of a lake can be described by the function $y = 334(0.976)^x$ where x represents the number of weeks from today. Today, the depth of the lake is 334 ft. What will be the depth in 6 weeks? Round your answer to the nearest whole number.

$x =$ # of weeks from today
 $x = \underline{6}$ weeks

$y = 334(0.976)^x$
 $y = 334(0.976)^6$
 $y = 288.699062$
 $y = 289$ ft.

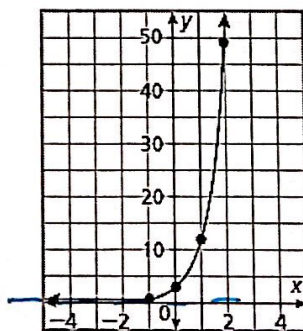
Name the asymptote for each graph:

6.



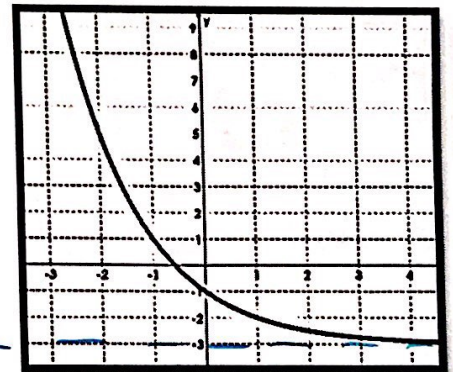
$y = 0$

7.



$y = 0$

8.



$y = -3$

Directions: Decide whether each of the following is an example of exponential growth (increase) or decay (decrease) and explain why. Then state the y-intercept.

9. $y = 1.5^x$
 $y = 5^x$
 $b > 1$, so
 Growth
 y-int (0,1)

10. $y = \left(\frac{1}{2}\right)^x$
 $y = 1 \cdot \left(\frac{1}{2}\right)^x$
 $0 < b < 1$, so
 Decay
 y-int (0,1)

11. $y = -3^x$
 $y = -1 \cdot 3^x$
 $b = 3$
 $b > 1$, so
 Growth
 y-int (0,-1)

12. $y = 2\left(\frac{4}{3}\right)^x$
 $\frac{4}{3} = 1.33$: $b > 1$, so
 Growth
 y-int (0,2)

Directions: Create an equation to represent each table or graph.

13.

x	y
-1	1.5
0	3
1	6
2	12

$$y = 3(2)^x$$

14.

Volleyball Tournament	
Round	Teams Left
1	16
2	8
3	4
4	2

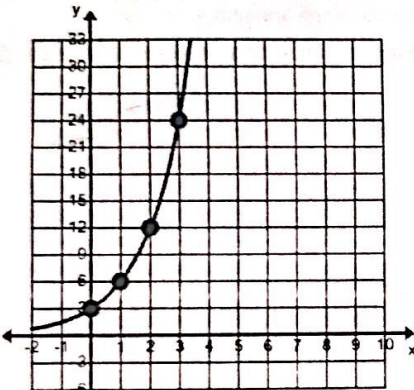
$$y = 32\left(\frac{1}{2}\right)^x$$

15.

x	0	1	2	3	4	5
y	$\frac{1}{16}$	$\frac{1}{4}$	1	4	16	64

$$y = \frac{1}{16}(4)^x$$

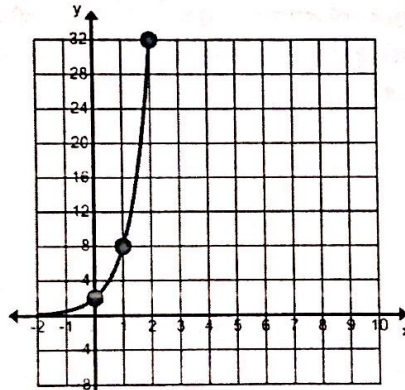
16.



x	0	1	2	3
y	3	6	12	24

$$y = 3(2)^x$$

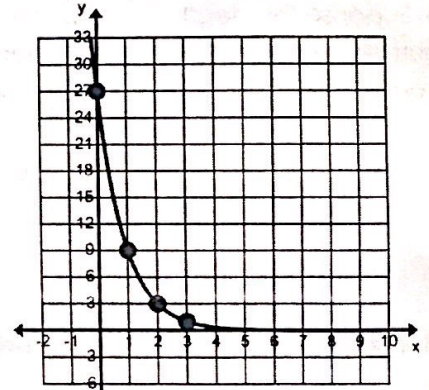
17.



x	0	1	2
y	2	8	32

$$y = 2(4)^x$$

21.



x	0	1	2
y	27	9	3

$$y = 27\left(\frac{1}{3}\right)^x$$