

Name: _____

Date: _____

EOC Practice Problems

1. A certain population of bacteria has an average growth rate of 2%. The formula for the growth of the bacteria's population is $A = P_0 (1.02)^t$ where P_0 is the original population and t is the time in hours.

$$A = 200(1.02)^{100}$$

If you begin with 200 bacteria, about how many bacteria will there be after 100 hours?

A. 7

B. 272

C. 1,449

D. 20,000

2. Which function represents this sequence?

n	1	2	3	4	5	...
a_n	6	18	54	162	486	...

$\times 3$ $\times 3$ $\times 3$ $\times 3$

$$a_n = a_1(r)^{n-1}$$

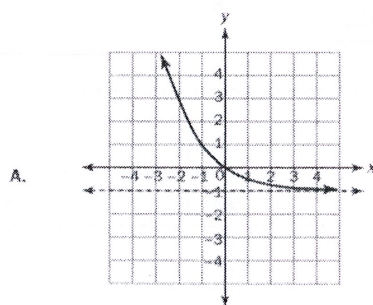
$$a_n = 6(3)^{n-1}$$

A. $f(n) = 3^{n-1}$ B. $f(n) = 6^{n-1}$ C. $f(n) = 3(6^{n-1})$ D. $f(n) = 6(3^{n-1})$

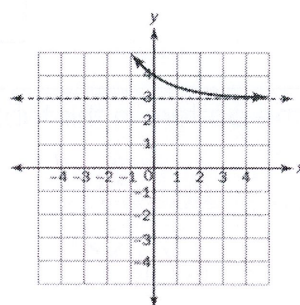
3. The points $(0, 1)$, $(1, 5)$, $(2, 25)$, and $(3, 125)$ are on the graph of a function. Which equation represents that function? *Exp Reg from unit 6 or plug in x's to formulas*

A. $f(x) = 2^x$ B. $f(x) = 3^x$ C. $f(x) = 4^x$ D. $f(x) = 5^x$

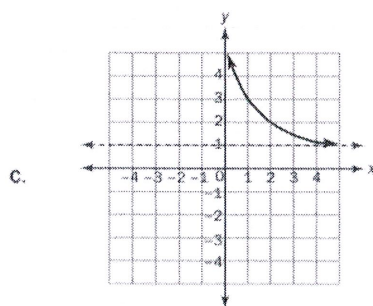
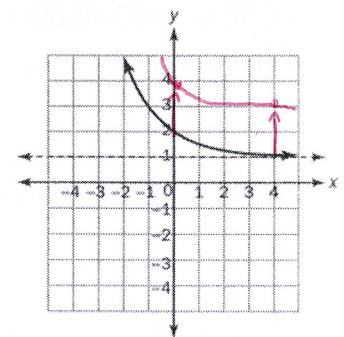
4. The function $f(x)$ is graphed below. Which graph shows $f(x) + 2$?



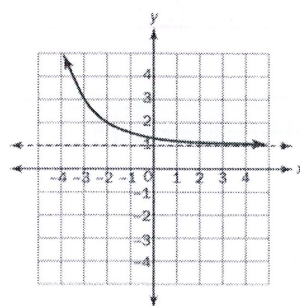
B.



\uparrow
Up 2



D.



$$f(x) = a \cdot b^{x-h} + k$$

5. Which function shows the function $f(x) = 3^x$ being translated 5 units to the left?

A. $f(x) = 3^x - 5$

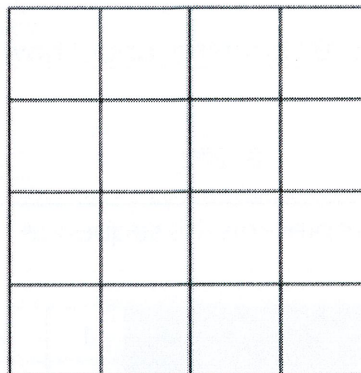
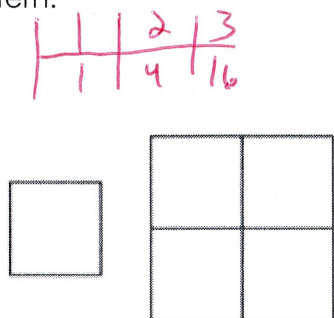
B. $f(x) = 3^{(x+5)}$

C. $f(x) = 3^{(x-5)}$

D. $f(x) = 3^x + 5$

6. Consider this pattern.

$$\begin{aligned} a_n &= a_1 (r)^{n-1} \\ &= 1(4)^{n-1} \\ &= 4^{n-1} \end{aligned}$$



Which function represents the sequence that represents the pattern?

A. $f(n) = 4^{n-1}$

B. $f(n) = 4^{(a_{n-1})}$

C. $f(n) = (a_n)(4^{n-1})$

D. $f(n) = (a_n)^4$

7. Which function is modeled in this table?

A. $f(x) = 1000(0.80)^x$

B. $f(x) = 1000(0.20)^x$

C. $f(x) = 1000(0.80)^{x-1}$

D. $f(x) = 1000(0.20)^{x-1}$

$$\begin{aligned} a_n &= a_1 (r)^{n-1} \\ &= 1000(0.8)^{n-1} \end{aligned}$$

x	f(x)
1	1000
2	800
3	640
4	512

$$\frac{800}{1000} = 0.8$$

$\times 0.8$
 $\times 0.8$
 $\times 0.8$

8. Which explicit formula describes the pattern in this table?

A. $C = 6d$

B. $C = d + 6$

C. $C = 6^d$

D. $C = d^6$

$$\begin{aligned} a_n &= a_1 (r)^{n-1} \\ &= 6(6)^{n-1} \\ &= 6^n \end{aligned}$$

or plug in
d to the formulas
and check

d	C
0	1
1	6
2	36
3	216

$\times 6$
 $\times 6$
 $\times 6$

9. If $f(12) = 100(0.50)^{12}$, which expression gives $f(x)$?

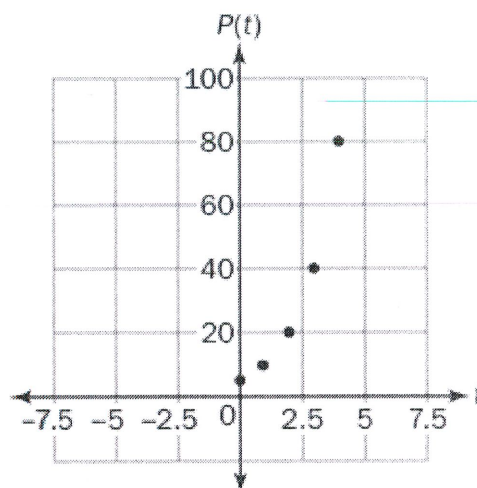
A. $f(x) = 0.50^x$

B. $f(x) = 100^x$

C. $f(x) = 100(x)^{12}$

D. $f(x) = 100(0.50)^x$

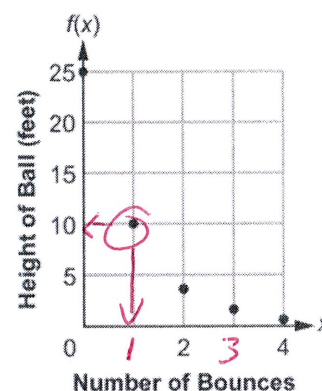
10. A population of squirrels doubles every year. Initially, there were 5 squirrels. A biologist studying the squirrels created a function to model their population growth: $P(t) = 5(2)^t$ where t is the time in years. The graph of the function is shown.



What is the range of the function?

- A. Any real number
 B. Any whole number greater than 0
 C. Any whole number greater than 5
 D. Any whole number greater than or equal to 5 *at the start*

11. The function graphed on this coordinate grid shows $f(x)$, the height of a dropped ball, in feet, after its x th bounce.



On which bounce was the height of the ball 10 feet?

- A. Bounce 1
 B. Bounce 2
 C. Bounce 3
 D. Bounce 4

12. Look at the graph.

Which equation represents this graph?

A. $y = 2^{(x+1)} - 2$

C. $y = 2^{(x+2)} - 1$

B. $y = 2^{(x-1)} + 2$

D. $y = 2^{(x-2)} + 1$

Only one that goes up 2

