

Unit 5 Test - REVIEW

For each sequence, state if it is arithmetic, geometric, or neither.

1) $-4, -20, -100, -500, -2500, \dots$

2) $-8.3, -8.1, -7.9, -7.7, -7.5, \dots$

3) $-25, -31, -37, -43, -49, \dots$

4) $18, 10, 6, 4, 3, \dots$

Find the next three terms in each sequence.

5) $14, 24, 34, 44, 54, \dots$

6) $4, -12, 36, -108, 324, \dots$

Find the tenth term in each sequence.

7) $a_n = a_{n-1} - 200$
 $a_1 = 25$

8) $a_n = a_{n-1} \cdot 4$
 $a_1 = 2$

Write the explicit formula for each sequence.

9) $-35, -31, -27, -23, -19, \dots$

10) $-39, -31, -23, -15, -7, \dots$

11) $-2, 8, -32, 128, -512, \dots$

12) $1, 3, 9, 27, 81, \dots$

Write the recursive formula for each sequence.

13) $4, -8, 16, -32, 64, \dots$

14) $7, 12, 17, 22, 27, \dots$

15) $29, 49, 69, 89, 109, \dots$

16) $-3, -18, -108, -648, -3888, \dots$

Determine if the data shown in linear, exponential, or neither.

17.

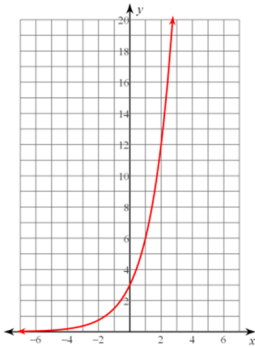
x	-2	-1	0	1	2
y	0	1	2	3	4

- A. Linear B. Exponential
C. Neither

18. $f(x) = 3x^2 - 2x + 6$

- A. Linear B. Exponential
C. Neither

19.



- A. Linear B. Exponential
C. Neither

20. $f(x) = 2^{x-1} + 1$

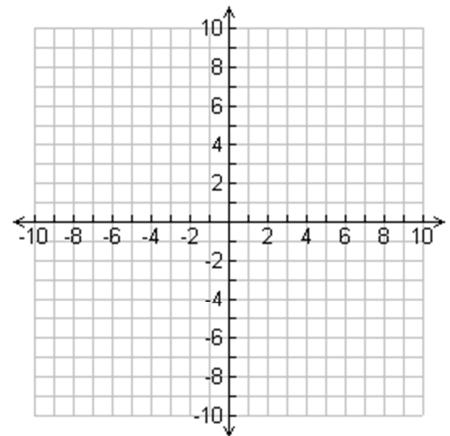
- A. Linear B. Exponential
C. Neither

Graph the following exponential functions by first filling out the table provided.

21. $f(x) = -2^{x-1}$

x	y
-2	
-1	
0	
1	
2	

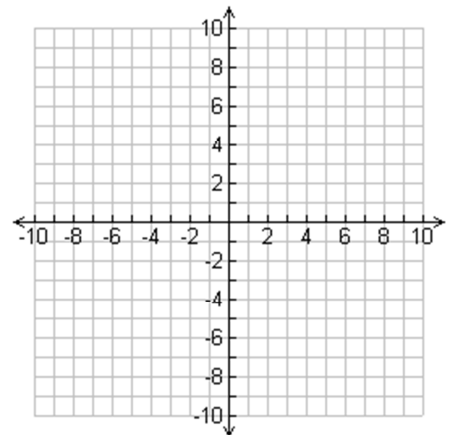
22.



23. $f(x) = 3^x + 1$

x	y
-2	
-1	
0	
1	
2	

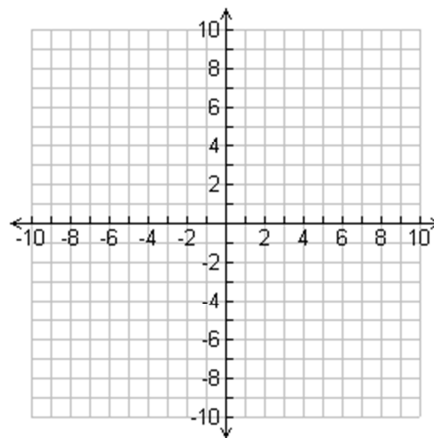
24.



25. $f(x) = 2^{x-3} - 6$

x	y
-2	
-1	
0	
1	
2	

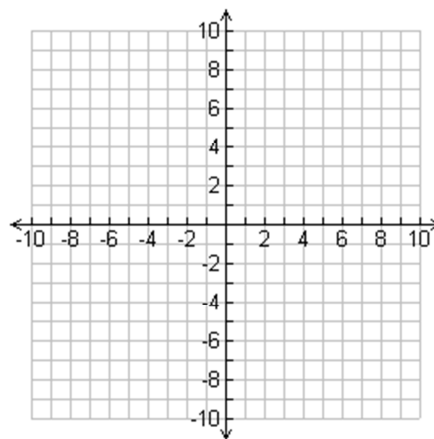
26.



27. $f(x) = -3 \cdot 2^{x+2} + 5$

x	y
-2	
-1	
0	
1	
2	

28.



Use the growth/decay formula or the interest formula to answer the following questions.

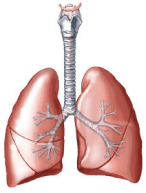
29. In 1995, there were 85 rabbits in Central Park. The population is increasing by 12% each year. How many rabbits are in Central Park in 2015?

ANSWER

30. From 1990 to 1997, the number of cell phone subscribers S (in thousands) in the US can be modeled by, $S = 5535.33(1.413)^t$ where t is number of years since 1990.

- How many cell phone subscribers were there in 1990?
- What is the rate at which cell phone subscribers are increasing?
- How many cell phone subscribers are there in the US today?

31. During normal breathing, about 12% of the air in the lungs is replaced after one breath. Write an exponential decay model for the amount of the original air left in the lungs if the initial amount of air in the lungs is 500 mL. How much of the original air is present after 24 breaths?



ANSWER

32. The foundation of your house has about 1,200 termites. The termites grow at a rate of about 2.4% per day. How many termites are in your home after 30 days?



ANSWER

33. The value of your brand new Dodge Ram 3500 decreases at a rate of 17.8% per year. At the end of the 8-year car loan, how much is your \$40,000 truck worth?



ANSWER

EXTRA CREDIT

34. You have a \$500 savings bond that was bought in 2000 with an interest rate of 4%. How much more money you make if an investment were compounded continually ($A = Pe^{rt}$) vs. monthly over a 10 year span.