

# Chapter 6 Test A

Simplify the expression. Write your answer using only positive exponents.

1.  $\frac{2^{-3}x^0}{y^{-4}}$

2.  $3^0$

3.  $5^{-6} \cdot 5^3$

4.  $(-4x^2)^3$

5.  $\left(\frac{1}{3a^3}\right)^{-4}$

6.  $12c^{-7}d^6$

Evaluate the expression.

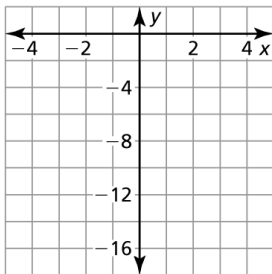
7.  $-\sqrt[3]{216}$

8.  $(64)^{5/3}$

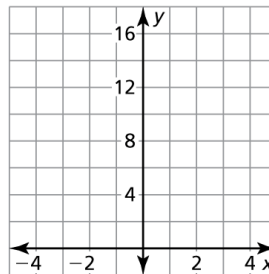
9.  $(-8)^{2/3}$

Graph the function. Describe the domain and range.

10.  $y = -2(3)^x$



11.  $y = 3(0.5)^x$



Solve the equation. Check your solution.

12.  $3^x = \frac{1}{81}$

13.  $25^{2x-3} = 125^{x+1}$

14. You deposit \$500 in a savings account that earns 7% interest compounded annually.

a. Write a function that represents the balance after  $t$  years.

b. What is the balance after 2 years?

15. You buy a used car for \$6599. Its value decreases by 12% every year.

a. Write a function that represents the value  $y$  (in dollars) of the car after  $t$  years.

b. What is the value of the car after 2.5 years?

c. What is the value of the car after 20 years?

d. According to the model, when will the value of the car be zero?

Answers

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

4. \_\_\_\_\_

5. \_\_\_\_\_

6. \_\_\_\_\_

7. \_\_\_\_\_

8. \_\_\_\_\_

9. \_\_\_\_\_

10. **See left.**

11. **See left.**

12. \_\_\_\_\_

13. \_\_\_\_\_

14. a. \_\_\_\_\_

b. \_\_\_\_\_

15. a. \_\_\_\_\_

b. \_\_\_\_\_

c. \_\_\_\_\_

d. \_\_\_\_\_

# Chapter 6 Test A (continued)

Determine whether the table represents an *exponential growth function*, an *exponential decay function*, or *neither*.

16. 

<b>x</b>	1	2	3	4
<b>y</b>	2	8	24	128

17. 

<b>x</b>	0	1	2	3
<b>y</b>	40	20	10	5

Decide whether the sequence is *arithmetic*, *geometric*, or *neither*.

18. 2, 4, 6, 8, K

19. 5, -10, 20, -40, K

20. 4, 9, 16, 25, K

21. -64, -32, -16, -8, K

Write a recursive rule for the sequence.

22. 

<b>Position, <math>n</math></b>	1	2	3
<b>Term, <math>a_n</math></b>	25	10	-5

23. 

<b>Position, <math>n</math></b>	1	2	3	4
<b>Term, <math>a_n</math></b>	-10	-6	-2	2

24. The first two terms of a sequence are  $a_1 = 4$  and  $a_2 = -2$ . Let  $a_3$  be the third term when the sequence is arithmetic and let  $b_3$  be the third term when the sequence is geometric. Find  $a_3 + b_3$ .

Evaluate the function for the given value of  $x$ .

25.  $y = 2^x$ ;  $x = 5$

26.  $f(x) = 3(4)^x$ ;  $x = -1$

27.  $f(x) = \frac{1}{2}(5)^x$ ;  $x = 3$

28.  $y = 0.5^x$ ;  $x = -4$

29. The bacteria *E. coli* often cause illness among people who eat infected food. Suppose that a **single** *E. coli* bacterium in a batch of ground beef begins doubling every minute.

a. Complete the table below that represents the number of bacteria after  $x$  minutes. (Assume no bacteria die.)

<b>Minutes, <math>x</math></b>	0	1	2	3	4	5	6
<b>Number of bacteria, <math>y</math></b>							

b. Write an equation that can be used to calculate the number of bacteria in the food after any number of minutes.

c. How many bacteria will there be after 20 minutes?

## Answers

16. \_\_\_\_\_

17. \_\_\_\_\_

18. \_\_\_\_\_

19. \_\_\_\_\_

20. \_\_\_\_\_

21. \_\_\_\_\_

22. \_\_\_\_\_

23. \_\_\_\_\_

24. \_\_\_\_\_

25. \_\_\_\_\_

26. \_\_\_\_\_

27. \_\_\_\_\_

28. \_\_\_\_\_

29. a. See left.

b. \_\_\_\_\_

c. \_\_\_\_\_