

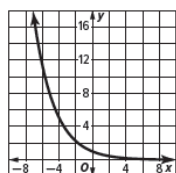
Exponential Functions Test Review

1. What is the domain of the exponential function $f(x) = 14(0.8)^x$?

2. What is the range of exponential function $y = 120(7)^x$?

- A. $x > 7$ B. all real numbers C. $y < 0$ D. $y > 0$

3. The graph of $y = \left(\frac{2}{3}\right)^x$ is shown below.



What is the range of the function?

4. What is the domain of $f(x) = 6(1.8)^x$?

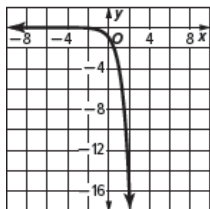
5. The range of the function $y = 725(1.125)^x$ is of the form $y > r$ for some value of r .

- a. What is r ?
- b. What is a possible scenario for this situation?

6. How would the domain of the function $y = 4(12)^x$ be affected if the function were changed to $y = 4(24)^x$?

- A. It changes from $x \geq 12$ to ≥ 24 .
- B. It changes from $x > 12$ to $x > 24$.
- C. It changes from $0 < x < 12$ to $0 < x < 24$.
- D. It remains the same.

7. The graph of $y = -4^x$ is shown below.



What is the range of the function?

8. How would the range of the function $y = 16(0.75)^x$ be affected if the function were changed to $y = -16(0.75)^x$?

- A. It remains the same. B. It changes from $y > 16$ to $y < -16$.
- C. It changes from $y < 0$ to $y > 0$. D. It changes from $y > 0$ to $y < 0$.

9. A quantity increases by 60% every hour. Which of the following is a possible equation for the quantity?

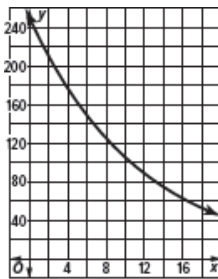
- a. $y = 7(60)^x$ b. $y = 8(1.6)^x$
 c. $y = 9(0.6)^x$ d. $y = 10(0.4)^x$

10. Find the rate of each growth or decay in the functions below.

- A. $y = 0.7(1.02)^x$ Growth or Decay Rate: _____
 B. $y = 4(0.92)^x$ Growth or Decay Rate: _____
 C. $y = 2(\frac{5}{4})^x$ Growth or Decay Rate: _____
 D. $y = 100(\frac{7}{8})^x$ Growth or Decay Rate: _____

11. George opened a bank account and the balance in his account after t years is given by the equation $A = 1625(1.015)^t$. How much did George put in the bank to start?

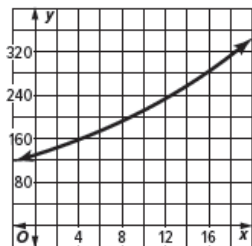
12. The mass of a sample of radioactive iodine in grams is given by $M = 250(0.917)^t$, where t is measured in days, and the graph of its mass is given below.



What was the initial mass?

13. The number of bacteria in a culture is given by $N = 6000b^t$, where t is time in hours since the first observation. If the culture is growing by 6% each hour, what is the value of b ?

14. The graph of $A = 130(1.05)^t$ represents the balance of a bank account t years after opening it. Its graph is shown below.



By what percent does the balance increase each year?

- A. 5% B. 1.05%
 C. 0.05% D. 30%

15. A culture starts with 20 bacteria and triples every hour. Write a formula for the number N of bacteria after t hours.

16. The population of a small town can be modeled by the exponential function $P = 14512(1.03)^t$, where t is the number of years after 2005. What is the significance of the value 14,512?

- A. There are 14,512 people in the town today.
- B. Each year, the population increases by 14,512.
- C. There are 14,512 people in the town in 2005.
- D. There will never be more than 14,512 people in the town.

17. An investor buys a stock worth \$60. For four consecutive years, the stock grows at a rate of approximately 3% per year. What is the stock worth after 4 years to the nearest cent?

18. Bismuth-210 is an isotope and it decays by about 13% each day. A sample initially has a mass of 150 mg. Write a formula for the amount A after t days.

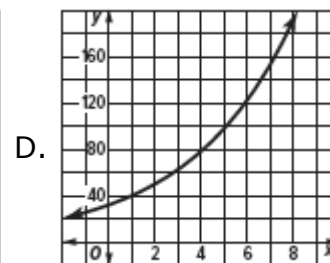
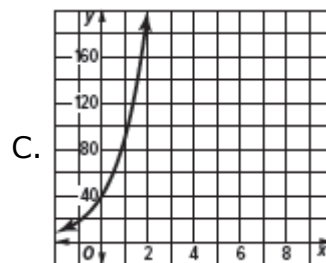
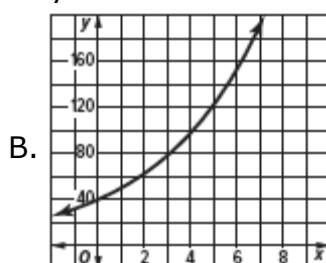
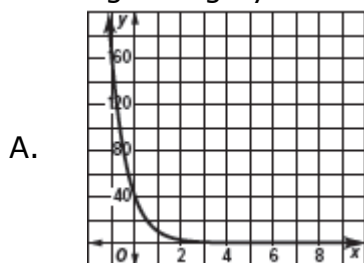
19. Use the table below to find an equation for $f(x)$. Assume that $f(x)$ is an exponential function.

x	$y=f(x)$
0	100
1	80
2	64
3	51.2

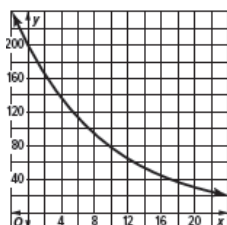
a. Equation: _____

b. What would the value of $f(x)$ be when $x = 7$?

20. Choose the graph that best represent the function whose initial value is 40 and it is growing by 125% per year.

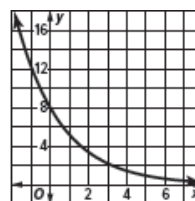


21. The graph of $y = 200(0.91)^x$ below models the amount y of a drug x hours after it is injected into a patient. What is the y -intercept?



22. The graph of the exponential function $y = 8(0.65)^x$ is shown below.

a. What is the equation of the horizontal asymptote?



b. How would the y -intercept change if the equation was $y = 12(0.65)^x$?

23. Of all the users of the web service Twitter, Lady Gaga (@ladygaga) has the most followers. At the start of year 2010, she had 3,200,000 followers. Her number of followers has been steadily increasing by 8% each month.

a. Let $f(x)$ stand for how many followers @ladygaga has, x months after the start of year 2010. Write a function formula for $f(x)$.

b. How many followers did @ladygaga have at the start of 2011?

24. In the exponential equation $y = ab^x$, what value of b will represent a growth rate of 1.6%?

25. Use the table below to find $f(x)$. Assume that $f(x)$ is an exponential function.

x	$y = f(x)$
0	800
1	400
2	200
3	100

A. $f(x) = 400 \times \left(\frac{1}{2}\right)^x$

B. $f(x) = 800 \times 2^x$

C. $f(x) = 800 \left(\frac{1}{2}\right)^x$

D. $f(x) = 100 \times 2^x$

26. What is the equation of the horizontal asymptote for the function $f(x) = 45(1.1)^x$?

A. $y = 49.5$ B. $y = 45$

C. $y = 1.1$ D. $y = 0$

27. Carmen wants to go on a cruise with her husband. She puts \$2000 in a savings account that earns 3.75% interest compounded quarterly. If the cruise costs \$4500, when will they have enough money to go?

28. Suppose the population of a town is 2,700 and is growing 4% each year. Write an equation to model the population growth, then predict the population after 12 years.

29. Find the missing term in the sequence 3, 21, 147, _____, 7203, 50421.

30. Find a formula for the n th term of the sequence that begins 5, 25, 125, 625, 3125,.... Assume the first term corresponds to $n=1$.