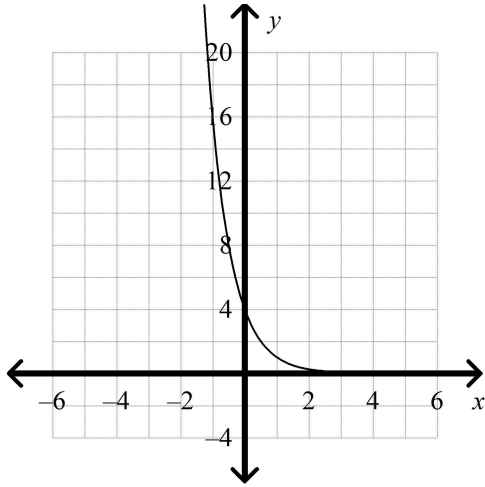


Chapter 7 PRACTICE Test

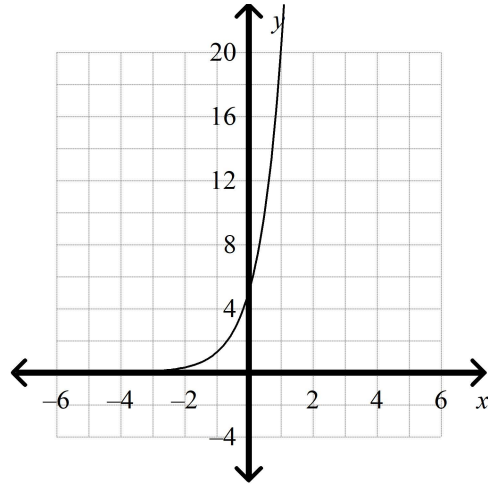
Graph the exponential function.

_____ 1. $y = 5(4)^x$

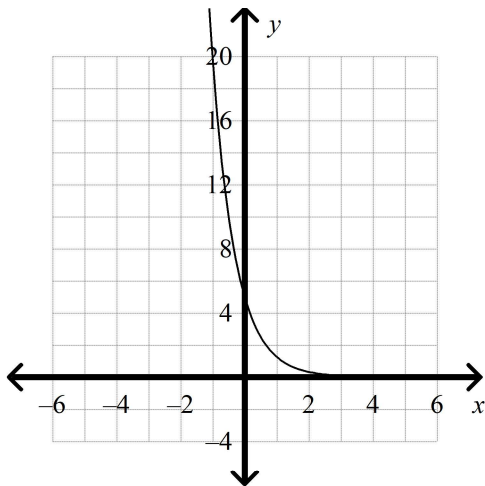
a.



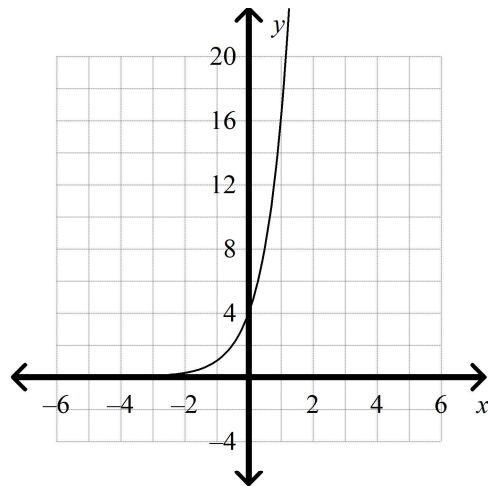
c.



b.



d.



_____ 2. An initial population of 205 quail increases at an annual rate of 10%. Write an exponential function to model the quail population. What will the approximate population be after 4 years?

a. $f(x) = 205(10)^x$; 2,050,000

c. $f(x) = 205(0.1)^x$; 300

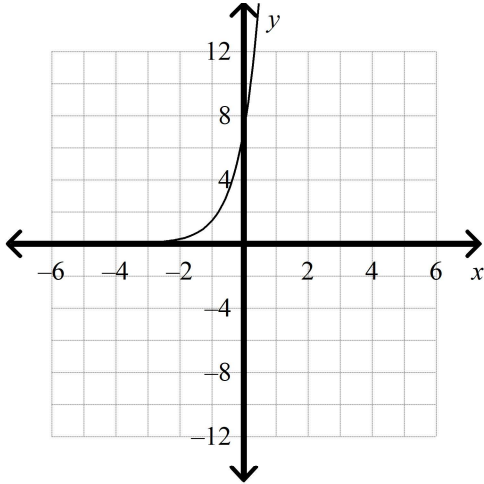
b. $f(x) = 205(1.1)^x$; 300

d. $f(x) = (205 \cdot 0.1)^x$; 176,610

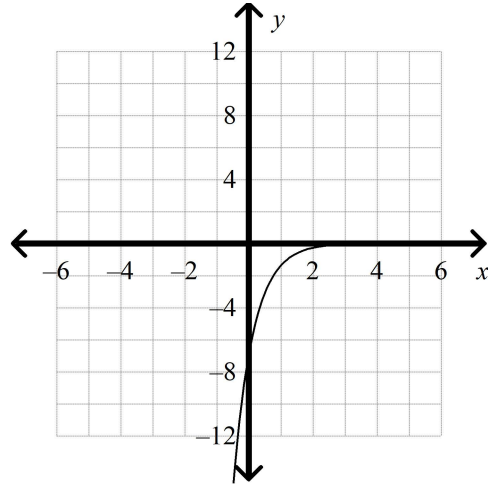
Graph the function.

___ 3. $y = 7\left(\frac{1}{5}\right)^x$

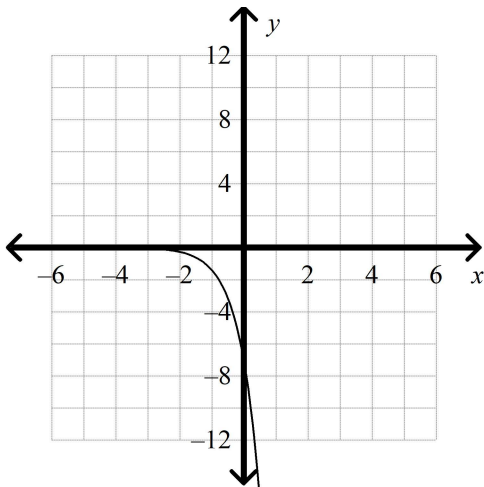
a.



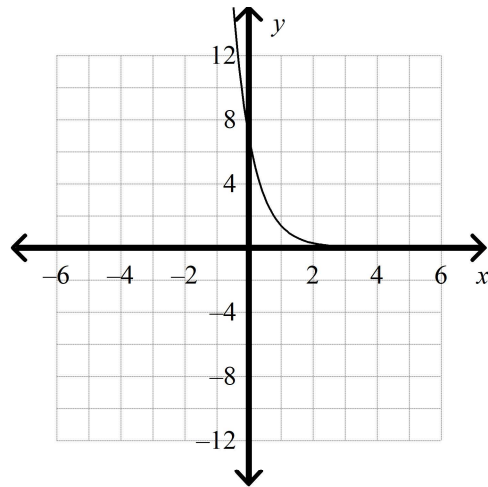
c.



b.



d.



- ___ 4. Suppose you invest \$1200 at an annual interest rate of 7.4% compounded continuously. How much will you have in the account after 30 years?
- a. \$75,453.68 b. \$11,048.80 c. \$38,765.04 d. \$7,241.50

Evaluate the logarithm.

___ 5. $\log_5 \frac{1}{125}$

- a. -2 b. -3 c. 3 d. 5

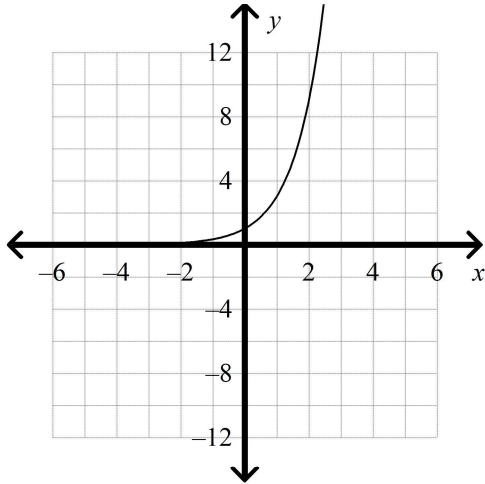
___ 6. $\log 0.01$

- a. -10 b. -2 c. 2 d. 10

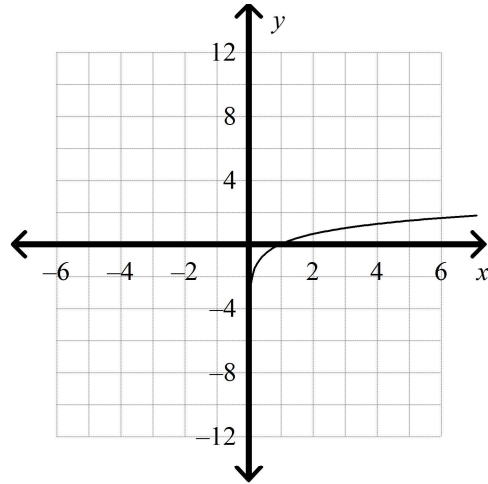
7. The pH of a liquid is a measure of how acidic or basic it is. The concentration of hydrogen ions in a liquid is labeled $[H^+]$. Use the formula $pH = -\log[H^+]$ to find the pH level, to the nearest tenth, of a liquid with $[H^+]$ about 7.8×10^{-6} .
- a. -6.9 b. 5.1 c. 6.0 d. 6.9

Graph the logarithmic equation.

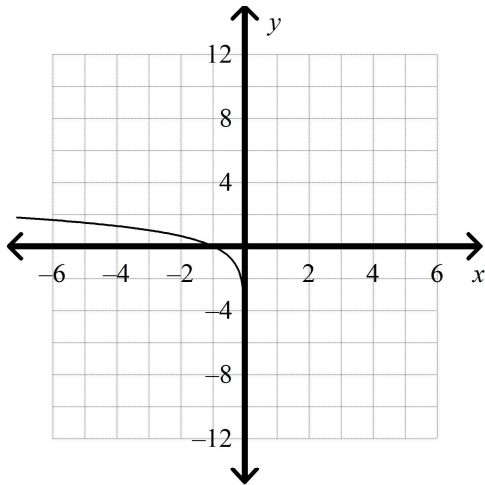
8. $y = \log_3 x$
a.



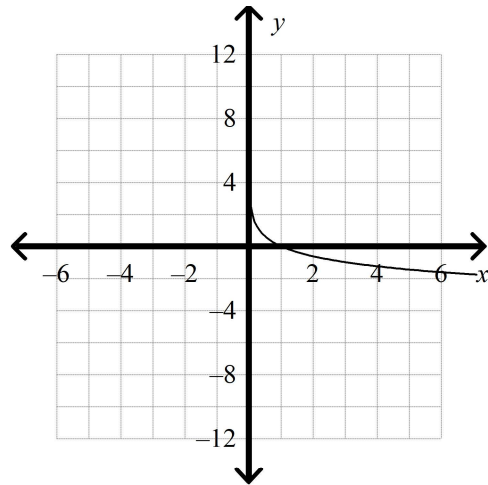
c.



b.



d.



9. Use the Change of Base Formula to evaluate $\log_4 57$.
- a. 1.756 c. 4.043
b. 2.916 d. 1.011

Solve the exponential equation.

- ___ 10. $4^{3x} = 8$
a. 2 b. $\frac{1}{2}$ c. 6 d. $\frac{5}{6}$
- ___ 11. Solve $3^{6x} = 40$. Round to the nearest ten-thousandth.
a. 15.5416 b. 0.5596 c. 1.8740 d. 20.1466

Solve the logarithmic equation. Round to the nearest ten-thousandth if necessary.

- ___ 12. $3 \log 2x = 4$
a. 10.7722 b. 5 c. 2.7826 d. 0.6309
- ___ 13. Solve $\log(3x + 14) = 2$.
a. $\frac{86}{3}$ b. $\frac{100}{3}$ c. -4 d. 86
- ___ 14. $\log(x + 9) - \log x = 3$
a. 0.0090 b. 0.3103 c. 3.2222 d. 111
- ___ 15. $2 \log 4 - \log 3 + 2 \log x - 4 = 0$
a. 12.3308 b. 43.3013 c. 86.6025 d. 1875
- ___ 16. Simplify $\ln e^3$.
a. 3 b. $\frac{1}{3e}$ c. $3e$ d. $\frac{1}{3}$
- ___ 17. Solve $\ln(2x - 7) = 5$. Round to the nearest thousandth.
a. 77.707 b. 70.707 c. 151.913 d. 141.413
- ___ 18. Solve $\ln x - \ln 6 = 0$.
a. 6 b. $6e$ c. e^6 d. $\ln 6$

Use natural logarithms to solve the equation. Round to the nearest thousandth.

- ___ 19. $4e^{4x+3} = 11$
a. 0.173 b. 1.003 c. 0.313 d. -0.497
- ___ 20. The sales of lawn mowers t years after a particular model is introduced is given by the function $y = 5500 \ln(9t + 4)$, where y is the number of mowers sold. How many mowers will be sold 2 years after a model is introduced? Round the answer to the nearest whole number.
a. 7,383 mowers c. 15,901 mowers
b. 37,897 mowers d. 17,001 mowers

Chapter 7 PRACTICE Test
Answer Section

- | | |
|------------|--|
| 1. ANS: C | OBJ: 7-1.1 To model exponential growth and decay |
| 2. ANS: B | OBJ: 7-1.1 To model exponential growth and decay |
| 3. ANS: D | OBJ: 7-2.1 To explore the properties of functions of the form $y = ab^x$ |
| 4. ANS: B | OBJ: 7-2.2 To graph exponential functions that have base e |
| 5. ANS: B | OBJ: 7-3.1 To write and evaluate logarithmic expressions |
| 6. ANS: B | OBJ: 7-3.1 To write and evaluate logarithmic expressions |
| 7. ANS: B | OBJ: 7-3.1 To write and evaluate logarithmic expressions |
| 8. ANS: C | OBJ: 7-3.2 To graph logarithmic functions |
| 9. ANS: B | OBJ: 7-4.1 To use the properties of logarithms |
| 10. ANS: B | OBJ: 7-5.1 To solve exponential and logarithmic equations |
| 11. ANS: B | OBJ: 7-5.1 To solve exponential and logarithmic equations |
| 12. ANS: A | OBJ: 7-5.1 To solve exponential and logarithmic equations |
| 13. ANS: A | OBJ: 7-5.1 To solve exponential and logarithmic equations |
| 14. ANS: A | OBJ: 7-5.1 To solve exponential and logarithmic equations |
| 15. ANS: B | OBJ: 7-5.1 To solve exponential and logarithmic equations |
| 16. ANS: A | OBJ: 7-6.1 To evaluate and simplify natural logarithmic expressions |
| 17. ANS: A | OBJ: 7-6.2 To solve equations using natural logarithms |
| 18. ANS: A | OBJ: 7-6.2 To solve equations using natural logarithms |
| 19. ANS: D | OBJ: 7-6.2 To solve equations using natural logarithms |
| 20. ANS: D | OBJ: 7-6.2 To solve equations using natural logarithms |