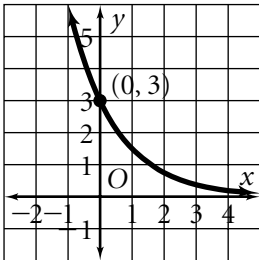


Chapter Practice

Chapter 8

For Exercises 1–9, choose the correct letter.

1. What is the equation for which this is the graph?



- A $y = 4(2)^x$ B $y = 3\left(\frac{1}{2}\right)^x$
 C $y = 2\left(\frac{1}{4}\right)^x$ D $y = 2(4)^x$
 E $y = 3(2)^x$

2. What is the inverse of $y = \log_5 x$?

- A $y = \log_x 5$ B $y = x^5$
 C $y = \frac{1}{\log_5 x}$ D $y = 5^x$
 E $y = e^5$

3. Which of the following is true?

- A $\log_8 10 = \log_6 10 + \log_2 10$
 B $\log_5 \left(\frac{12}{5}\right) = \frac{\log_5 12}{\log_5 5}$
 C $\log_2 9 = \log_2 3 + \log_2 2$
 D $\log_6 14 - \log_6 2 = \log_6 \left(\frac{2}{14}\right)$
 E $\log_3 25 = 2 \log_3 5$

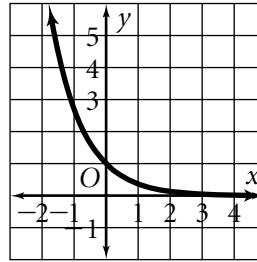
4. What is the solution of $100^{6x} = 1000$?

- A $x = 0$ B $x = -\frac{1}{4}$
 C $x = 0.25$ D $x = 0.5$
 E none of the above

5. Which of the following is equal to 1?

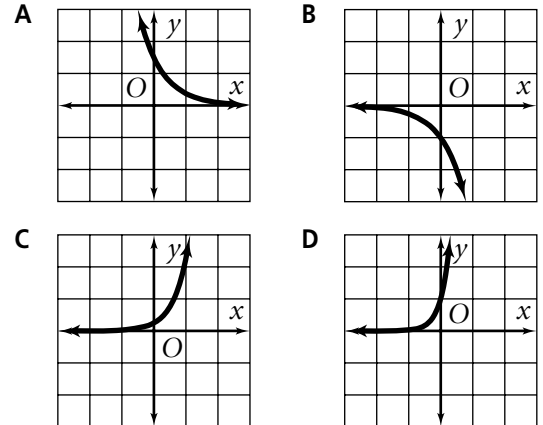
- A $\log 1 + \ln 0$ B $\log_e 1$
 C $\ln -1 + \ln 2$ D $\log 5 - \log 4$
 E $\ln e^3 - \ln e^2$

6. What is the equation for which this is the graph?



- A $y = e^{-x}$ B $y = e^{\frac{x}{2}}$
 C $y = e^{3x}$ D $y = e^{2x}$
 E $y = e^x$

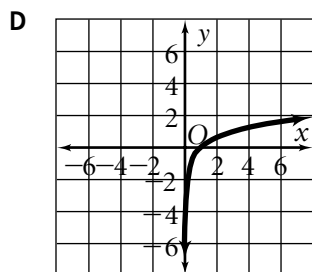
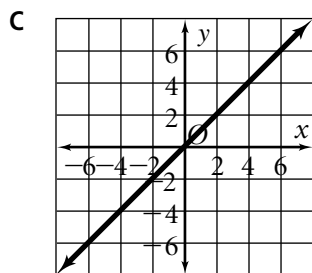
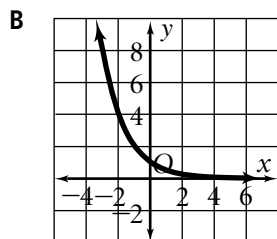
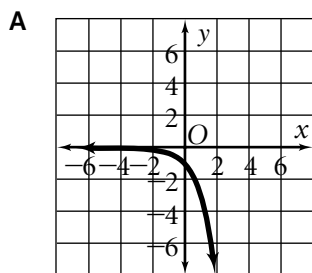
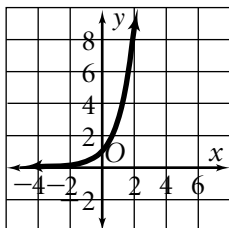
7. Which graph best models exponential decay?



8. Which value is the largest?

- A $\log 0.1$ B $\log_3 \frac{1}{9}$
 C $\log_{\frac{1}{4}} \frac{1}{4}$ D $\log_4 \frac{1}{64}$

9. This is the graph of $y = 3x$. Which of the graphs below shows $y = \log_3 x$?



For Exercises 10–14, compare the quantity in Column A with that in Column B. Choose the best answer.

- A The quantity in Column A is greater.
- B The quantity in Column B is greater.
- C The two quantities are equal.
- D The relationship cannot be determined on the basis of the information supplied.

Column A

Column B

- | | |
|-----------------------------------|-------------------------------------|
| 10. growth factor of $y = 3(5)^x$ | growth factor of $y = 6(4)^x$ |
| 11. $\log_2 8$ | $\log_3 27$ |
| 12. $\log_4 8 + \log_4 2$ | $\log_2 24 - \log_2 3$ |
| 13. $\log x$ | $\ln x$ |
| 14. $\log_{14} 54$ | $\frac{\log_{12} 54}{\log_{12} 14}$ |

For Exercises 15–21, write your answer.

- 15. Write an equation in the form $y = ab^x$ of an exponential function with base 4 whose graph passes through the point $(2, 4.5)$.
- 16. Solve $2^{2x} + 60 = 316$.
- 17. **Open-ended** Expand the logarithm $\log_2 48$ into an expression containing four logarithmic terms.
- 18. Write an exponential function to model a population of 200 pythons increasing at an annual rate of 2%.
- 19. Evaluate $\log_3 9 + \log_6 1 + \log_2 8 + \log_5 \frac{1}{5} + \log_4 256$.
- 20. Solve $x^{\frac{3}{2}} - 12 = 52$.
- 21. You invest \$100 at an annual rate of 3% compounded continuously. Find the amount you will have in the account after 10 yr. Round your answer to the nearest dollar.