

Practice 25

CUMULATIVE PRACTICE THROUGH CHAPTER 4

Simplify, using properties of exponents.

1. $7^{4/3} \cdot 7^{2/3}$

2. $6^{1/2} \cdot 6^{-3/2}$

3. $64^{1/2} \cdot 64^{-1/3}$

4. $5^{-1/2} \cdot 5^{5/2}$

5. $\frac{10^{2/5}}{10^{7/5}}$

6. $\frac{3^{8/3}}{9^{4/3}}$

7. $\frac{16^{5/4}}{16^{3/4}}$

8. $\frac{2^{3/4}}{2^{-1/4}}$

9. $(5^{3/2})^2$

10. $(27^2)^{1/6}$

11. $(49^{2/3})^{3/4}$

12. $(4^{3/2})^0$

For Exercises 13–16, tell whether you would expect the correlation between the two quantities to be positive, negative, or about zero.

13. The number of gas stations in a town and the average price of a gallon of regular gas.
14. A student's house number and the student's grade on a math test.
15. The tension on a guitar string and the frequency of the note that the string produces.
16. The temperature in a refrigerator and the number of days a carton of milk will last before going sour.

Write as a logarithm of a single number or expression. Assume all variables are positive and not equal to 1.

17. $-2 \log 3$

18. $4 \log_5 2 - 2 \log_5 3$

19. $\frac{1}{2} \ln 9 + \frac{1}{3} \ln 8$

20. $5 \log_b x + \frac{3}{2} \log_b x^2$

21. $\frac{3}{4} \log_a 16 + \frac{1}{2} \log_a 25 - 2 \log_a 2$

22. $4 \log p - 3 \log q + 2 \log r$

Suppose a bank offers interest compounded continuously. Use the formula $A = Pe^{rt}$ to find the value of \$100 after 15 years at each interest rate.

23. 4.5%

24. 6%

25. 3.25%

26. 9%

Find an equation for the inverse of each function and graph the function and its inverse in the same coordinate plane.

27. $f(x) = -\frac{2}{3}x$

28. $f(x) = 3x - 5$

29. $f(x) = 7 - \frac{5}{2}x$