

6. Write the following in logarithmic form.
- a) $7^3 = 343$ b) $5^{-2} = 1/25$ c) $e^x = 6$

7. Write the following in exponential form.
- a) $\log_4 64 = 3$ b) $\log_8 2 = 1/3$ c) $\ln 7.4 = x$

8. Evaluate each expression.
- a) $4^{\log_4 9}$ b) $\log_7 7^{-5}$

- c) $\log_{81} 3$ d) $\log_{13} 169$

9. In chemistry the pH of a substance is given by the function $P(H) = -\log(H)$ where H is the hydrogen ion concentration of the substance. How many times as great is the acidity of orange juice with a pH of 3 as battery acid with a pH of 0?

10. Solve each equation.

a) $\log_4 x = \frac{1}{2}$

b) $\log_{81} 729 = x$

c) $\log_8 (x^2 + x) = \log_8 12$

d) $\ln(x - 10) = 0.5$

e) $\ln x + \ln 4x = 10$

11. Condense the following into a single statement.

a) $\log_5 (x + 4) + \frac{1}{2} \log_5 x$

b) $2\log_2 x - \log_2 (x + 3)$

c) $\log_6 3x^2 - 2 \log_6 \left(\frac{x}{y}\right) + \log_6 y$

12. Solve each equation. Round to 4 decimal places where appropriate.

a) $2^x = 53$

b) $2.3^x = 66.6$

c) $6^{3y} = 8^{y-1}$

13. Holly deposited \$500 into a bank account that pays an annual interest rate of 3% compounded quarterly. Use $A = P(1 + \frac{r}{n})^{nt}$ to find how long it will take for Diane's money to double.