

Log Review

Write each equation in logarithmic form.

11. $100 = 10^2$

$\log_{10} 100 = 2$

12. $9^3 = 729$

$\log_9 729 = 3$

13. $64 = 4^3$

$\log_4 64 = 3$

Evaluate each logarithm.

14. $\log 1000$

3

15. $\log_4 256$

$\frac{\log 256}{\log 4} = 4$

16. $\log_7 9$

$\frac{2}{3}$

Solve each equation.

17. $\log_3 (x + 1) = 4$

$3^4 = x + 1$

$81 = x + 1$

$x = 80$

19. $\log x + \log 2 = 5$

$\log_{10} 2x = 5$

$10^5 = 2x$

$x = 50,000$

21. $6^{3x+2} = 18$

$\frac{(3x+2) \log 6}{\log 6} = \frac{\log 18}{\log 6}$

$x = -1.290$

24. $5e^{2x} - 1 = 9$

$+1 +1$

$\frac{5e^{2x}}{5} = \frac{10}{5} \rightarrow$

$e^{2x} = 2$

$\frac{2x}{2} = \frac{\ln 2}{2}$

$x = .3466$

26. Radium has a half-life of 1660 years. If the initial amount of radium is 200 grams, how much will remain after 500 years?

$200 \left(\frac{1}{2}\right)^{\frac{500}{1660}} = 162.3149$

Simplify.

27. $\ln e^6$

6

28. $\ln 3$

3

29. $\log_2 2$

1

30. $\log_3 8$

8

You place \$900 in an investment account that earns 6% interest compounded continuously. Find the balance after 5 years.

$A = Pe^{rt} = 900e^{(0.06 \times 5)} = \1214.87