

Name \_\_\_\_\_ Class \_\_\_\_\_ Date \_\_\_\_\_

**Practice 8-5****Exponential and Logarithmic Equations**

Use the Change of Base Formula to evaluate each expression. Round answers to the nearest hundredth.

1.  $\log_2 12$       2.  $\log_3 40$       3.  $\log_4 8$       4.  $\log_5 3$       5.  $\log_2 1$   
 6.  $\log_5 10$       7.  $\log_2 8$       8.  $\log_3 6$       9.  $\log_9 3$       10.  $\log_8 3$

Solve each equation. Check your answer. Round answers to the nearest hundredth.

11.  $2^x = 243$       12.  $7^n = 12$       13.  $5^{2x} = 20$       14.  $8^{n+1} = 3$   
 15.  $4^{n-2} = 3$       16.  $4^{3n} = 5$       17.  $15^{2n-3} = 245$       18.  $4^x - 5 = 12$

Solve each equation. Check your answer. Round answers to the nearest hundredth.

19.  $\log 3x = 2$       20.  $4 \log x = 4$       21.  $\log(3x - 2) = 3$   
 22.  $2 \log x - \log 5 = -2$       23.  $\log 8 - \log 2x = -1$       24.  $\log(x + 21) + \log x = 2$   
 25.  $8 \log x = 16$       26.  $\log x = 2$       27.  $\log 4x = 2$   
 28.  $\log(x - 25) = 2$       29.  $2 \log x = 2$       30.  $\log 3x - \log 5 = 1$

Use a table to solve each equation. Round answers to the nearest hundredth.

31.  $10^x = 182$       32.  $8^n = 12$       33.  $10^{2x} = 9$       34.  $5^{n+1} = 3$   
 35.  $10^{n-2} = 0.3$       36.  $3^{3n} = 50$       37.  $10^{2n-5} = 500$       38.  $11^x - 50 = 12$

The function  $y = 1000(1.005)^x$  models the value of \$1000 deposit at 6% per year (0.005 per month)  $x$  months after the money is deposited.

39. Use a graph (on your graphing calculator) to predict how many months it will be until the account is worth \$1100.  
 40. Predict how many years it will be until the account is worth \$5000.

Solve each equation. Round answers to the nearest hundredth.

41.  $2 \log 3x - \log 9 = 1$       42.  $\log x - \log 4 = -1$       43.  $\log x - \log 4 = -2$   
 44.  $\log x - \log 4 = 3$       45.  $2 \log x - \log 4 = 2$       46.  $\log(2x + 5) = 3$   
 47.  $2 \log(2x + 5) = 4$       48.  $\log 4x = -1$       49.  $2 \log x - \log 3 = 1$

Solve by graphing. Round answers to the nearest hundredth.

50.  $10^n = 3$       51.  $10^{3y} = 5$       52.  $10^{k-2} = 20$   
 53.  $5^x = 4$       54.  $2^{4x} = 8$       55.  $3^{x+5} = 15$