

3-1 Defining and Evaluating Logarithms

1) What is a logarithm?

Rewrite each equation in exponential form.

2) $\log_n m = -6$

3) $\log 243 = x$

Rewrite each equation in logarithmic form.

4) $20^2 = 400$

5) $e^y = z$

Evaluate each expression.

6) $\log_7 343$

7) $\log_4 64$

8) $\log_3 9$

9) $\log_2 \frac{1}{32}$

10) $\log_7 49$

11) $\log_6 \frac{1}{36}$

12) $\log_3 243$

13) $\log_6 216$

Approximate between what two integers each expression lies without using a calculator.

14) $\log_3 44$

15) $\log_6 64$

16) $\log 7$

17) $\ln 6.963$

Evaluate each expression without using a calculator. Explain your reasoning.

18) $\ln e^2$

19) $10^{\log 7}$

20) Beth invests \$7,652 in a savings account with a fixed annual interest rate of 6% compounded continuously. What will the account balance be after 10 years?

21) Matt invests \$2,028 in a retirement account with a fixed annual interest rate of 4% compounded semiannually. How long will it take for the account balance to reach \$3,393.69?