

Name KEY

Evaluate each logarithm without using a calculator.

✓ 1.  $\log_3 27 = 3$

✓ 2.  $\log_8 64 = 2$

✓ 3.  $\log_2 64 = 6$

✓ 4.  $\log_{10} 1000 = 3$

✓ 5.  $\log_5 \frac{1}{5} = -1$

✓ 6.  $\log_7 \frac{1}{49} = -2$

✓ 7.  $\log_9 3 = \frac{1}{2}$

✓ 8.  $\log_{36} \frac{1}{6} = -\frac{1}{2}$

✓ 9.  $\log_5 125 = 3$

✓ 10.  $\log_{64} 4 = \frac{1}{3}$

✓ 11.  $\log_3 81 = 4$

✓ 12.  $\log_8 2 = \frac{1}{3}$

✓ 13.  $\log_{81} 9 = \frac{1}{2}$

✓ 14.  $\log_{10} 0.01 = -2$

✓ 15.  $\log_8 4 = \frac{2}{3}$

✓ 16.  $\log_{16} \frac{1}{8} = -\frac{3}{4}$

✓ 17.  $\log_{13} 1 = 0$

✓ 18.  $\log_{13} 13 = 1$

✓ 19.  $\log_{13} 13^5 = 5$

✓ 20.  $\log_7 \sqrt[3]{49} = \log_7 (7^2)^{\frac{1}{3}} = \frac{2}{3}$

✓ 21.  $\log_3 \sqrt[5]{9} = \log_3 (3^2)^{\frac{1}{5}} = \frac{2}{5}$

✓ 22.  $\log_{\frac{1}{2}} 8 = -3$

✓ 23.  $\log_{\frac{1}{3}} 27 = -3$

✓ 24.  $\log_2 \sqrt[3]{\frac{1}{4}} = \log_2 (2^{-2})^{\frac{1}{3}} = -\frac{2}{3}$

✓ 25.  $\log_5 0 = \text{undefined}$