NAME _____ DATE _____ PERIOD _____

11-5

Practice

Common Logarithms

Given that log 3 = 0.4771, log 5 = 0.6990, and log 9 = 0.9542, evaluate each logarithm.

1. log 300,000

2. log 0.0005

3. log 9000

4. log 27

5. log 75

6. log 81

Evaluate each expression.

7. log 66.3

8. $\log \frac{17^4}{5}$

9. $\log 7(4^3)$

Find the value of each logarithm using the change of base formula.

10. $\log_6 832$

11. $\log_{11} 47$

12. $\log_3 9$

Solve each equation or inequality.

13. $8^x = 10$

14. $2.4^x \leq 20$

15. $1.8^{x-5} = 19.8$

16. $3^{5x} = 85$

17. $4^{2x} > 25$

18. $3^{2x-2} = 2^x$

19. ***Seismology*** The intensity of a shock wave from an earthquake is given by the formula $R = \log_{10} \frac{I}{I_0}$, where R is the magnitude, I is a measure of wave energy, and $I_0 = 1$. Find the intensity per unit of area for the following earthquakes.

a. Northridge, California, in 1994, $R = 6.7$

b. Hector Mine, California, in 1999, $R = 7.1$