Name_____ Date _____

5.2 Practice B

In Exercises 1–3, rewrite the equation in exponential form.

1. $\log_9 1 = 0$ **2.** $\log_6 216 = 3$ **3.** $\log_2 \frac{1}{4} = -2$

In Exercises 4–6, rewrite the equation in logarithmic form.

4. $13^{-2} = \frac{1}{169}$ **5.** $4^{3/2} = 8$ **6.** $81^{1/2} = 9$

In Exercises 7–12, evaluate the logarithm.

7. $\log_8 64$ **8.** $\log_2 32$ **9.** $\log_{10} 1$

10. $\log_3 \frac{1}{81}$ **11.** $\log_2 0.125$ **12.** $\log_{10} 0.01$

In Exercises 13–15, evaluate the logarithm using a calculator. Round your answer to three decimal places.

13. $\log\left(\frac{1}{5}\right)$ **14.** $2 \ln(1.4)$ **15.** $\ln(0.4) - 2$

16. The decibel level D of sound is given by the equation $D = 10 \log\left(\frac{I}{10^{-12}}\right)$, where I is the intensity of the sound. The pain threshold for sound is 125 decibels. Does a sound with an intensity of 10 exceed the pain threshold? Explain.

In Exercises 17–19, simply the expression.

17. $e^{\ln 7x}$ **18.** $10^{\log 18}$ **19.** $\log\left(10^{3x}\right)$

In Exercises 20–25, find the inverse of the function.

20. $y = 0.75^x$ **21.** $y = \log_{3/4} x$ **22.** $y = \log\left(\frac{x}{2}\right)$

23. $y = \ln(x + 2)$ **24.** $y = e^{x-3}$ **25.** $y = 6^x + 2$

26. The length ℓ (in inches) of an alligator and its weight w (in pounds) are related by the function $\ell = 27.1 \ln w - 32.8$.

a. Estimate the length (in inches) of an alligator that weighs 250 pounds. What is its length in feet?

b. Find the inverse of the given function. Use the inverse function to find the weight of a 14-foot alligator. (*Hint*: Convert to inches first.)