Name: **Date:**
AFM – Intro to Logs **Block:**

Complete the following questions based off of the directions in each section.

In 3–14, write each exponential equation in logarithmic form.

3. $2^4 = 16$ **4.** $5^3 = 125$ **5.** $64 = 8^2$

6. $12^0 = 1$ **7.** $216 = 6^3$ **8.** $10^{-1} = 0.1$

In 15–26, write each logarithmic equation in exponential form.

15. $\log_{10} 100 = 2$ **16.** $\log_5 125 = 3$ **17.** $\log_4 16 = 2$

18. $7 = \log_2 128$ **19.** $5 = \log_3 243$ **20.** $\log_7 1 = 0$

In 24–29, write each expression as a single logarithm.

24. $\log_e x + \log_e 10$ **25.** $\log_2 a + \log_2 b$

26. $4 \log_2 (x + 2)$ **27.** $\log_{10} y - 2 \log_{10} (y - 1)$

28. $\log_e x + 2 \log_e y - 2 \log_e z$ **29.** $\frac{1}{2} \log_3 x^{10} - \frac{2}{5} \log_3 x^5$

In 30–35, expand each expression using the properties of logarithms.

30. $\log_2 2ab$ **31.** $\log_3 \frac{10}{x}$ **32.** $\log_5 a^{-5}$

33. $\log_{10} (x + 1)^2$ **34.** $\log_4 \frac{x^6}{y^5}$ **35.** $\log_e \sqrt{x}$

In 53–56, find each value of x to the nearest thousandth.

53. $e^x = 35$ **54.** $e^x = 217$ **55.** $e^x = 2$ **56.** $e^x = -2$