Name:_____

Date:_____Class:_____

Logs Test Review

Solve each equation using a common base.

1. $9^{3x-7} = 9^{5-x}$	**2.** $2^{w+4} \cdot 2^{w+6} = 2^{2w+1}$
3. $216 = 6^{2r-11}$	**4.** $2^{3k-1} \cdot 2^{5k-7} = 16$

Write each equation in exponential form or logarithmic form.

5. $\log_2 128 = 7$	**6.** $8^3 = 512$	**7.** $\log_3 \frac{1}{27} = -3$

Evaluate each logarithm. Use the change of base formula when necessary.

8. $\log_6 36$	**9.** $\log_4 64$	**10.** $\log_{16} \frac{1}{2}$
11. $\log 1000$	**12.** $\log_{18} 1$	**13.** $\log_5 38$

Rewrite as a single logarithm. Simplify if possible.

14. $\frac{1}{3}(\log_5 8 + \log_5 27) - \log_5 3$	**15.** $2 \cdot \log 6 - \frac{1}{4} \cdot \log 16 + \log 3$

Expand each logarithm.

16. $\log_2 \left(\frac{y}{z^5}\right)^2$	**17.** $\log_3 \sqrt[4]{m^5 n^2}$

Solve each equation. Check for extraneous solutions.

18. $\log_7(4n - 7) = \log_7(-3n)$	**19.** $2 \cdot \log(x - 3) = \log 25$

20. $\log_8(28K - 20) + 15 = 18$	**21.** $\log_2 4 + \log_2(c - 9) = 5$

Write each equation in logarithmic form.

22. $e^x = 36$	**23.** $e^{x-9} = 74$

Write each equation in exponential form.

24. $\ln x = 18$	**25.** $\ln 87 = x + 4$

Condense each expression as a single logarithm.

26. $\ln 4 + \ln 3x$	**27.** $\frac{1}{2} \cdot \ln 256 - 3 \cdot \ln 2$

Expand each logarithmic expression.

28. $\ln(2m^8)$	**29.** $\ln(\frac{m^5}{n^2})^3$

Solve each equation. Be sure to check for extraneous solutions.

30. $\ln(2x^2 - 15) = \ln(x^2 + 34)$	**31.** $\ln 8 + \ln(n - 9) = 5 \cdot \ln 2$
32. $4e^{3k} + 1 = 85$	**33.** $3e^{4m-7} - 8 = 106$