

Unit 6 Review - Logarithms

Date _____ Hour _____

Rewrite each equation in exponential form.

1) $\log_5 x = 2$

2) $\log_7 m = n$

3) $\log_{13} x = y$

Rewrite each equation in logarithmic form.

4) $15^{-18} = v$

5) $20^2 = 400$

6) $11^2 = 121$

Evaluate each expression.

7) $\log_2 32$

8) $\log_7 343$

Use a calculator to approximate each to the nearest thousandth.

9) $\log_5 4.4$

10) $\log_5 67$

11) $\log_3 38$

12) $\log_2 49$

Expand each logarithm.

13) $\log_4 (xy^6)^4$

14) $\log_5 \frac{3^5}{10^3}$

15) $\log_7 \left(\frac{6}{11^3} \right)^3$

16) $\log_9 (x \cdot y \cdot z^2)$

Condense each expression to a single logarithm.

17) $4 \log_5 x + 16 \log_5 y$

18) $4 \log_5 w + \frac{\log_5 u}{2}$

19) $30 \log_2 6 - 5 \log_2 5$

20) $6 \log_5 11 + 30 \log_5 6$

Solve each equation. Round your answers to the nearest ten-thousandth.

21) $-4.3 \cdot 2^{5x} = -31$

22) $-19^{p-1} = -71$

23) $-4 \cdot 2^{v+7.3} = -28$

24) $9 \cdot 4^{2.5v} = 5$

25) $3^{n-1} - 7 = -6$

26) $2 \cdot 12^{-8.6x} = 85$

27) $-12^{5.4n} - 7 = -83$

28) $8e^{6m} + 3 = 46.6$

Solve each equation.

29) $\log_{14} (4n + 5) = \log_{14} (5n - 6)$

30) $\log_5 (-2x - 2) = \log_5 -x$

31) $\log_9 (-2n + 4) = \log_9 (4 - 3n)$

32) $\log_{18} (-5x + 10) = \log_{18} (3x + 10)$

33) $\log_3 8 - \log_3 (x + 1) = 2$

34) $\log_5 2 + \log_5 (x - 7) = \log_5 54$