

SM3-A HW #8-7 (Unit 8 Review#1)

Date _____ Period _____

Expand each logarithm.

1) $\log_9 (u \cdot v)$

2) $\log_4 \frac{x}{y^2}$

3) $\log_3 (z^2 \sqrt{x \cdot y})$

Condense each expression to a single logarithm.

4) $\log_7 x - \log_7 y$

5) $\frac{\log_8 x}{3}$

6) $6 \log_5 u$

7) $\log_9 u - 5 \log_9 v$

Identify the domain and range of each.

8) $y = \log_6 (2x + 5) - 5$

9) $y = \ln (3x + 1) - 5$

Rewrite each equation in exponential form.

10) $\log_{15} 76 = n$

11) $\log_2 (2x - 3) = 4$

12) Rewrite in logarithmic form.

$3^x = 12$

13) Rewrite in logarithmic form.

$y^x = 194$

14) What is the domain and range of:

$y = 3 \cdot 2^x + 1$

15) What is the domain and range of:

$y = 7.95^{x-5} - 4$

Condense each expression to a single logarithm. Convert rational exponents into radical form.

16) $5 \log_4 u - 15 \log_4 v$

17) $12 \log_9 a - 3 \log_9 b$

18) $4 \log_5 a - 6 \log_5 b$

19) $24 \log_5 11 - 4 \log_5 2$

Solve each equation. Remember to check for extraneous solutions.

20) $\sqrt{2x-18} = \sqrt{x-4}$

21) $\sqrt{-1-2x} = x$

Solve each equation. (Hint: change all the exponentials to the same base using substitution)

22) $3^{3-2p} = 1$

23) $6^{-2a} = 6^{-3a-2}$

24) $4^x = 64^{3x}$

25) $\left(\frac{1}{8}\right)^{-x-1} = 16^{2x}$

Solve each equation. Round your answers to the nearest ten-thousandth. (Isolate the exponential, "undo" the exponential)

26) $15^{-9r} - 5 = 92$

27) $5 \cdot 19^{-2x} = 55.3$

Solve each equation.

$$28) \log(-7n + 2) = \log(n^2 + 2)$$

Solve each equation. (Hint: these require you to "condense the log" THEN undo the log.)

$$29) \log_2 5 - \log_2 x = 4$$

$$30) \log_7 x - \log_7(x - 1) = \log_7 28$$

Find the inverse of each function.

$$31) y = \log_3 x + 6$$

$$32) y = e^{\frac{x}{5}}$$

Solve each equation.

$$33) \log_7(x - 9) = 2$$

$$34) \log_7 5x - 1 = 2$$