Math-3A

Name_____ ID: 1

SM3-A HW #13-7 (Logarithms)

Date_____ Period____

Expand each logarithm.

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

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

3) $\log_2 \left(z \cdot xy^3\right)^4$

Condense each expression to a single logarithm.

4) $\log_7 x - \log_7 y$

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

6) $6\log_5 u$

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

Identify the domain and range of each.

8) $y = \log_6 (3x - 1) - 4$

9) $y = \log_2 (3x + 7) - 4$

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

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

16) $3^{3-2p} = 1$

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

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

18) $15^{-9r} - 5 = 92$

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

Solve each equation.

20) $\log\left(-7n + 2\right) = \log\left(n^2 + 2\right)$

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

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

22) $\log_7 x - \log_7 \left(x - 1\right) = \log_7 28$