Algebra 2 S2 Name: _____ Block: _____

Converting Logs and Exponentials

Convert the exponential to a log. (a = 1)

1. $4^5 = 1024$ $\log_4 1024 = 5$
2. $6^3 = 216$ $\log_6 216 = 3$
3. $64^{\frac{4}{3}} = 256$ $\log_{64} 256 = 4/3$
4. $3^{2x} = 71$ $\log_3 71 = 2x$
5. $2^3 = 8$ $\log_2 8 = 3$
6. $9^{7x-1} = 31$ $\log_9 31 = 7x-1$
7. $5^0 = 1$ $\log_5 1 = 0$
8. $12^{3x-4} = 221$ $\log_{12} 221 = 3x-4$

Convert the exponential to a log. (a ≠ 1)

9. $5 * 11^3 = 6655$ $\log_{11} 1331 = 3$
10. $2 * 18^2 = 648$ $\log_{18} 324 = 2$
11. $8 * 4^4 = 1024$ $\log_4 128 = 4$
12. $9 * 3^{-3} = \frac{1}{3}$ $\log_3 1/27 = 3$
13. $5 * \left(\frac{1}{5}\right)^3 = 625$ $\log_{1/5} 125 = 3$
14. $3 * 17^2 = 867$ $\log_{17} 289 = 2$
15. $4 * 8^3 = 2048$ $\log_8 512 = 3$
16. $12 * 14^{2x-1} = 1728$ $\log_{14} 144 = 2x-1$

Convert the log to an exponential.

17. $log_6 36 = 2$ $6^2 = 36$
18. $log_{289} 17 = \frac{1}{2}$ $289^{1/2} = 17$
19. $log_{14} \frac{1}{196} = -2$ $14^{-2} = \frac{1}{196}$
20. $log_3 81 = 4$ $3^4 = 81$
21. $log_u \frac{15}{16} = v$ $u^v = \frac{15}{16}$
22. $log_v u = 4$ $v^4 = u$
23. $log_{\frac{7}{4}} x = y$ $\left(\frac{7}{4}\right)^y = x$
24. $log_2 v = u$ $2^u = v$