

## Log and Exponent Worksheet

No Calculators!!

For questions 1-11, solve for  $x$ . If you can't write your answer as a number, then write it as a logarithm.

1.  $\frac{1}{4^{x-2}} = 64$

2.  $5^{3x-1} = 4^0$

3.  $\log_2(\ln x) = 2$

4.  $2\log(x) = 4$

5.  $2^x = 5$

6.  $\log_3(2x) - \log_3(x+5) = 0$

7.  $\log(x^3 - 1) - \log(x^2 + x + 1) = 1$

8.  $\log_{12}(x+5) + \log_{12}(x-5) = 2$

9.  $x^{\frac{3}{5}} = 8$

10.  $\ln(x+2) = \ln x + \ln 2$

11.  $2\ln(x+1) = 4\ln 5$

For questions 12-21, simplify as much as possible. If you can't write your answer as a number, then write it as a logarithm.

12.  $\sqrt[6]{81}$

13.  $7^{-2} \cdot 27^{\frac{1}{3}}$

14.  $\left(\frac{-8a^3}{b^{-6}}\right)^{\frac{2}{3}}$

15.  $e^{\ln 7}$

16.  $\frac{\log_5 9}{\log_5 3}$

17.  $\log_4 64^{\frac{3}{4}}$

18.  $500(125)^{\frac{-2}{3}}$

19.  $\sqrt[4]{\sqrt[4]{64}} \cdot \sqrt[16]{16}$

20.  $\log_3 40 - \log_3 8$

21.  $\log_5 7 + \log_5 4$

22. Express the following as a single

logarithm:  $3 + \log_3 4$