

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. $\sqrt[5]{81}$

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. $\sqrt[4]{\sqrt[3]{64}} \cdot \sqrt[6]{16}$

20. $\log_3 40 - \log_3 8$

21. $\log_5 7 + \log_5 4$

22. Express the following as a single logarithm: $3 + \log_3 4$