

4.4.1: Logarithms and Logarithmic Functions (Exercises)

SECTION 4.4 PROBLEM SET: LOGARITHMS AND LOGARITHMIC FUNCTIONS

Rewrite each of these exponential expressions in logarithmic form:

1. $3^4 = 81$	2. $10^5 = 100,000$
3. $5^{-2} = 0.04$	4. $4^{-1} = 0.25$
5. $16^{1/4} = 2$	6. $9^{1/2} = 3$

Rewrite each of these logarithmic expressions in exponential form:

7. $\log_5 625 = 4$	8. $\log_2(1/32) = -5$
9. $\log_{11} 1331 = 3$	10. $\log_{10} 0.0001 = -4$
11. $\log_{64} 4 = 1/3$	12. $\ln \sqrt{e} = \frac{1}{2}$

If the expression is in exponential form, rewrite it in logarithmic form.

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13. $5^x = 15625$	14. $x = 9^3$
15. $\log_5 125 = x$	16. $\log_3 x = 5$
17. $\log_{10} y = 4$	18. $e^x = 10$
19. $\ln x = -1$	20. $e^5 = y$

For each equation, rewrite in exponential form and solve for x.

21. $\log_5(x) = 3$	22. $\log_2(x) = -2$
23. $\log_{10}(x) = -3$	24. $\log_3(x) = 6$
25. $\log_{25}(x) = 1/2$	26. $\log_{64}(x) = 1/3$

Evaluate without using your calculator.

27. $\ln \sqrt[3]{e}$	28. $\ln \frac{1}{e^2}$
29. $\ln e^{10}$	30. $\log_{10}(10^e)$

For problems 31 – 38: Evaluate using your calculator. Use the change of base formula if needed

31. $\log 20$	32. $\ln 42$
33. $\ln 2.9$	34. $\log 0.5$
35. $\log_4 36$	36. $\log_7 100$
37. $\log_{105} 3.5$	38. $\log_{1.067} 2$

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