

Assignment 2-4

For Problems 1-2, change each equation from exponential form to logarithmic form or vice versa.

1. $e^x = 17$

2. $\log x = -2$

Simplify each expression in Problems 3-4.

3. $\ln e^{a+b}$

4. $3^{\log_3 m^2}$

For Problems 5-6, solve for x without using a calculator. Simplify your answers.

5. $\log_2 x = 3$

6. $\log_x 64 = 3$

For Problems 7-10, sketch a graph without using a calculator. List all x -intercepts, and write an equation for each asymptote. Use a separate coordinate plane for each graph.

7. $y = \log_2 x$

8. $y = \log_2(x+3)$

9. $y = |\log_2 x|$

10. $y = \log_2 |x|$

Use Properties of Logarithms to expand the expressions in Problems 11-12.

(All variables represent positive quantities.)

11. $\ln \frac{a}{bc}$

12. $\log(xy^2)$

Use Properties of Logarithms to condense the expressions in Problems 12-14 into single logarithms.

(All variables represent positive quantities.)

13. $3 \ln x - \frac{1}{2} \ln y$

14. $\ln a - (2 \ln b - \ln c)$

For Problems 15-16, solve for t without using a calculator.

15. $\ln e^{2-t} = 6$

16. $e^{2t-1} - 3 = 0$

17. Use a calculator to solve for x in $3e^{-x+1} = 5 - x^2$.

18. Find the value of $\log_3 20$. (Express answers to 3 or more decimal place accuracy.)

19. Use an f' number line to determine whether or not $f(x) = x^3 - 9x^2 + 27x - 36$ is strictly monotonic (strictly increasing or strictly decreasing).

Differentiate in Problems 20-34.

20. $y = \ln x^5$

21. $y = \ln(x^2 - 5x)$

22. $f(x) = \ln|x^3 + 2x|$

23. $g(y) = (\ln y)^4$

24. $g(t) = \ln \sqrt{t^3 - t}$

25. $f(x) = \log_5 |x^2 - 1|$

26. $h(x) = (x+1) \ln x$

27. $y = \ln \frac{x^2}{x-1}$

28. $f(t) = \frac{t}{\ln|t|}$

29. $y = \ln(\ln(x-1))$

30. $f(x) = \ln(\cot x)$

31. $f(x) = e^{3x^2-1}$

32. $y = 5^{3x^2-1}$

33. $y = x^x$

34. $y = (2x-1)^{\ln x}$