

Section 5 – 3: The Logarithmic Function

Name _____

Write in logarithmic form.

1. $6 = 3^x$

2. $y = 10^x$

3. $e^{-x} = 5$

4. $x = 7^y$

5. $x + 1 = e^{2y}$

6. $y - 2 = 10^x$

7. $e^x = (y + 1)$

8. $x + 2 = 10^y$

9. $y - 3 = \left(\frac{1}{2}\right)^x$

10. $x + 2 = \left(\frac{3}{2}\right)^y$

11. $-x = \left(\frac{2}{5}\right)^{-y}$

12. $x = \left(\frac{1}{3}\right)^{y+2}$

Write in exponential form.

13. $\log_4 x = y$

14. $\log_x y = 4$

15. $x = \log_5 y$

16. $3 = \log_x y$

17. $x = \log 3$

18. $\log y = x$

19. $\ln 3 = x$

20. $\ln 2 = x - 3$

21. $\log_2 x = (y - 5)$

22. $5 = \log_x (y + 2)$

23. $\log_b (x - 2) = y$

24. $\ln y = (x + 4)$

25. $\ln (x + 1) = y$

26. $\log_2 x = y$

27. $5 = \log_b (3y)$

28. $8 = \log_x (2y - 3)$

Convert to an exponential equation and solve for x.

29. $\log_2 x = 3$

30. $3/2 = \log_9 x$

31. $\log x = -1$

32. $\log_3 x = 0$

33. $\log x = -2$

34. $\log x = 1$

35. $\log x = 3$

36. $2/3 = \log_8 x$

37. $3/2 = \log_{16} x$

38. $-5/2 = \log_4 x$

39. $-3/2 = \log_9 x$

40. $x = \log_3 27$

41. $x = \log_2 16$

42. $x = \log_2 32$

43. $x = \log_{64} 16$

44. $x = \log_9 27$

45. $x = \log_{81} 27$

46. $x = \log_4 32$

47. $x = \log_7 \sqrt{7}$

48. $\log_5(1/5) = x$

49. $\log_3(1/81) = x$

50. $\log_2(1/32) = x$

51. $\log_3 1 = x$

52. $\log_x 100 = 2$

53. $\log_x 81 = 4$

54. $\log_x 64 = 3$

55. $\log_x 1 = 6$

56. $\log_x 7 = 1/2$

57. $\log_x 4 = 2/3$

58. $\log_x 5 = 1/3$

59. $\log_x(4/3) = -1/2$

60. $\log .01 = x$

Evaluate.

61. $\log_4 4$

62. $\log_5 5$

63. $\log_3 81$

64. $\log_2 1$

65. $\log_2 8$

66. $\log 1$

67. $\log 100$

68. $\log .01$

69. $\log_7\left(\frac{1}{7}\right)$

70. $\ln e$

71. $\log_2\left(\frac{1}{8}\right)$

72. $\log_5 \sqrt{5}$

73. $\log_3\left(\frac{1}{9}\right)$

74. $-3\log_5 1$

75. $2\log_4 4$

76. $\log_2(\log_3 3)$