

Write each equation in logarithmic form.

6. $49 = 7^2$

7. $10^3 = 1000$

8. $625 = 5^4$

9. $\frac{1}{10} = 10^{-1}$

10. $8^2 = 64$

11. $4 = \left(\frac{1}{2}\right)^{-2}$

12. $\left(\frac{1}{3}\right)^3 = \frac{1}{27}$

13. $10^{-2} = \frac{1}{100}$

50. Error Analysis Find the error in the following evaluation of $\log_{27} 3$. Then evaluate the logarithm correctly.

$\log_{27} 3 = x$

$27 = x^3$

$3 = x$

$\log_{27} 3 = 3$

Evaluate each logarithm.

14. $\log_2 16$

15. $\log_4 2$

16. $\log_8 8$

17. $\log_4 8$

18. $\log_2 8$

19. $\log_{49} 7$

20. $\log_5 (-25)$

21. $\log_3 9$

22. $\log_2 2^5$

23. $\log_3 \frac{1}{2}$

24. $\log 10,000$

25. $\log_5 125$

Write each equation in exponential form.

53. $\log_2 128 = 7$

54. $\log 0.0001 = -4$

55. $\log_7 16,807 = 5$

56. $\log_6 6 = 1$

57. $\log_4 1 = 0$

58. $\log_3 \frac{1}{9} = -2$

59. $\log_2 \frac{1}{2} = -1$

60. $\log 10 = 1$

61. $\log_2 8192 = 13$

(Complete odds #6-61)

Find the inverse of each function.

63. $y = \log_4 x$

64. $y = \log_{0.5} x$

65. $y = \log_{10} x$

66. $y = \log_2 2x$

67. $y = \log(x + 1)$

68. $y = \log 10x$

69. $y = \log(x - 2)$

70. $y = \log_5 x^2$

71. $y = \log_x 3$

Graph each logarithmic function, and its inverse. Write the domain, range, x & y-intercepts & end behavior.

72. $y = \log_2 x$

73. $y = 2 \log_2 x$

74. $y = \log_4 (2x + 3)$

75. $y = \log_5 x$

76. $y = 3 \log x$

77. $y = \log_2 (x - 3)$

78. $y = 1 + \log x$

79. $y = \log(x - 2) + 1$

80. $y = \log_6 (x + 1)$

81. $y = \log_8 x - 2$

82. $y = \log_2 x + \frac{1}{3}$

83. $y = \log(x - t)$

Find the domain and the range of the graph of each function.

(Complete odds # 75-83)

(Complete odds #63-71)

Match each function with its inverse.

a. $y = \log_4 x$

b. $y = \log_4 x$

c. $y = -\log_4 x$

d. $y = -\log_4 x$

i. $y = 4^x$

ii. $y = \left(\frac{1}{4}\right)^{-x}$

iii. $y = \left(\frac{1}{4}\right)^x$

iv. $y = 4^{-x}$

(Complete A-D)