

$$24. \log_8 1 = \log_8(8^0) = 0$$

$$26. \log 0.000001 = \log 10^{-6} = -6$$

$$28. \log_4 8 = \log_4(4^{3/2}) = \frac{3}{2}$$

$$30. 2^{\log_2 13} = 13$$

$$32. e^{2 \ln 7} = (e^{\ln 7})^2 = 7^2 = 49$$

$$34. \log_3 \sqrt{243} = \log_3(3^{5/2}) = \frac{5}{2}$$

$$36. \log_5 250 - \log_5 2 = \log_5 \frac{250}{2} = \log_5 125 = \log_5 5^3 = 3$$

$$38. \log_{10}(\log_{10} 10^{100}) = \log_{10} 100 = \log_{10} 10^2 = 2$$

$$40. \log_2(x\sqrt{x^2+1}) = \log_2 x + \log_2 \sqrt{x^2+1} = \log_2 x + \frac{1}{2} \log_2(x^2+1)$$

$$42. \log\left(\frac{4x^3}{y^2(x-1)^5}\right) = \log(4x^3) - \log[y^2(x-1)^5] = \log 4 + 3 \log x - [2 \log y + 5 \log(x-1)]$$

$$44. \ln\left(\frac{\sqrt[3]{x^4+12}}{(x+16)\sqrt{x-3}}\right) = \frac{1}{3} \ln(x^4+12) - [\ln(x+16) + \frac{1}{2} \ln(x-3)]$$

$$46. \log x + \log(x^2y) + 3 \log y = \log(x \cdot x^2y \cdot y^3) = \log(x^3y^4)$$

$$48. \log_5 2 + \log_5(x+1) - \frac{1}{3} \log_5(3x+7) = \log_5[2(x+1)] - \log_5(3x+7)^{1/3} = \log_5\left(\frac{2(x+1)}{\sqrt[3]{3x+7}}\right)$$