

$$23. \log_2 128 = \log_2(2^7) = 7$$

$$25. 10^{\log 45} = 45$$

$$27. \ln(e^6) = 6$$

$$29. \log_3 \frac{1}{27} = \log_3 3^{-3} = -3$$

$$31. \log_5 \sqrt{5} = \log_5 5^{1/2} = \frac{1}{2}$$

$$33. \log 25 + \log 4 = \log(25 \cdot 4) = \log 10^2 = 2$$

$$35. \log_2(16^{23}) = \log_2(2^4)^{23} = \log_2 2^{92} = 92$$

$$37. \log_8 6 - \log_8 3 + \log_8 2 = \log_8 \left(\frac{6}{3} \cdot 2\right) = \log_8 4 = \log_8 8^{2/3} = \frac{2}{3}$$

$$39. \log(AB^2C^3) = \log A + 2 \log B + 3 \log C$$

$$41. \ln \sqrt{\frac{x^2-1}{x^2+1}} = \frac{1}{2} \ln \left(\frac{x^2-1}{x^2+1}\right) = \frac{1}{2} [\ln(x^2-1) - \ln(x^2+1)]$$

$$43. \log_5 \left(\frac{x^2(1-5x)^{3/2}}{\sqrt{x^3-x}}\right) = \log_5 x^2(1-5x)^{3/2} - \log_5 \sqrt{x(x^2-1)}$$
$$= 2 \log_5 x + \frac{3}{2} \log_5(1-5x) - \frac{1}{2} \log_5(x^3-x)$$

$$45. \log 6 + 4 \log 2 = \log 6 + \log 2^4 = \log(6 \cdot 2^4) = \log 96$$

$$47. \frac{3}{2} \log_2(x-y) - 2 \log_2(x^2+y^2) = \log_2(x-y)^{3/2} - \log_2(x^2+y^2)^2 = \log_2 \left(\frac{(x-y)^{3/2}}{(x^2+y^2)^2}\right)$$

$$49. \log(x-2) + \log(x+2) - \frac{1}{2} \log(x^2+4) = \log[(x-2)(x+2)] - \log \sqrt{x^2+4} =$$
$$\log \left(\frac{x^2-4}{\sqrt{x^2+4}}\right)$$