

58. (a) False; $\log\left(\frac{x}{y}\right) = \log x - \log y \neq \frac{\log x}{\log y}$
- (b) False; $\log_2 x - \log_2 y = \log_2\left(\frac{x}{y}\right) \neq \log_2(x - y)$
- (c) True; the equation is an identity: $\log_5 \frac{a}{b^2} = \log_5 a - \log_5 b^2 = \log_5 a - 2 \log_5 b$.
- (d) True; the equation is an identity: $\log 2^z = z \log 2$.
- (e) False; $\log P + \log Q = \log(PQ) \neq (\log P)(\log Q)$.
- (f) False; $\log a - \log b = \log\left(\frac{a}{b}\right) \neq \frac{\log a}{\log b}$.
- (g) False; $x \log_2 7 = \log_2 7^x \neq (\log_2 7)^x$.
- (h) True; the equation is an identity. $\log_a a^a = a \log_a a = a \cdot 1 = a$.
- (i) False; $\log(x - y) \neq \frac{\log x}{\log y}$. For example, $0 = \log(3 - 2) \neq \frac{\log 3}{\log 2}$.
- (j) True; the equation is an identity: $-\ln\left(\frac{1}{A}\right) = -\ln A^{-1} = -1(-\ln A) = \ln A$.