LT A4.4 | How do I expand and condense Logarithms? 1/16

Product Property

$$\log_n(a) + \log_n(b) = \log_n(a \cdot b)$$

expanded → condensed

Quotient Property

$$\log_n(a) - \log_n(b) = \log_n\left(\frac{a}{b}\right)$$

expanded → condensed

Power Property

$$b \cdot \log_n(a) = \log_n(a^b)$$

expanded = condensed

Ex1: Condense

A. $\log_3 12 + \log_3 z = \log_3(12z)$

B. $4\log_5 x + 3\log_5 y$

$\log_5 x^4 + \log_5 y^3 = \log_5(x^4 \cdot y^3)$

Ex2: Expand

$$\log_4\left(\frac{x^2}{y}\right)$$

$$\log_4(x^2) - \log_4(y)$$

$$2\log_4 x - \log_4 y$$