

Condensing Log Rules Practice

Condense each expression to a single logarithm.

1) $3\log_9 2 - 2\log_9 5$

$$\log_9 2^3 - \log_9 5^2$$
$$\log_9 8 - \log_9 25$$

$$\log_9 \left(\frac{25}{8} \right)$$

3) $2\log_5 x + 12\log_5 y$

$$\log_5 x^2 + \log_5 y^{12}$$

$$\log_5 x^2 y^{12}$$

5) $6\log_5 10$

$$\log_5 10^6$$

$$\log_5 1,000,000$$

7) $\log_4 2 + \log_4 7$

$$\log_4 (2 \cdot 7)$$

$$\log_4 (14)$$

9) $\log_3 x - 2\log_3 y$

$$\log_3 \left(\frac{x}{y^2} \right)$$

2) $\log_6 x + \log_6 y + 6\log_6 z$

$$\log_6 xyz^6$$

4) $\log_3 12 + \log_3 7 + 4\log_3 5$

$$\log_3 12 \cdot 7 \cdot 5^4$$

$$5^4 = 625$$

$$\log_3 (52500)$$

6) $\log_7 u - \log_7 v$

$$\log_7 \frac{u}{v}$$

8) $5\log_7 11 - \log_7 8$

$$\log_7 11^5 - \log_7 8$$

$$\log_7 \left(\frac{11^5}{8} \right)$$

$$\log_7 \left(\frac{161051}{8} \right)$$

10) $\log_2 12 + \log_2 7 + \log_2 5$

$$\log_2 (12 \cdot 7 \cdot 5)$$

$$\log_2 (420)$$