

Use the log properties to write out:

1. $\log_3 5x^2y$ $\log_3 5 + 2\log_3 x + \log_3 y$

2. $\log_4 \frac{2b^3}{c^4}$ $\log_4 2 + 3\log_4 b - 4\log_4 c$

3. $\log_7 \frac{3a\sqrt{d}}{5}$ $\log_7 3 + \log_7 a + \frac{1}{2}\log_7 d - \log_7 5$

4. $\log_6 \frac{hk^3}{2n}$ $\log_6 h + 3\log_6 k - \log_6 2 - \log_6 n$

5. $\log_3 xy^2$ $\log_3 x + 2\log_3 y$

6. $\log_5 \sqrt{\frac{a}{b}}$ $\frac{1}{2}\log_5 a - \frac{1}{2}\log_5 b$

7. $\log_2 6uv$ $\log_2 6 + \log_2 u + \log_2 v$

8. $\log_4 \frac{3x}{y^5}$ $\log_4 3 + \log_4 x - 5\log_4 y$

Use the log properties to simplify:

9. $3\log_8 x + 5\log_8 y$

$$\log_8 x^3 y^5$$

10. $\frac{1}{3}\log_2 x - 6\log_2 y$

$$\log_2 \frac{x^{1/3}}{y^6}$$

11. $\log_9 4 + 2\log_9 y - 7\log_9 z$

$$\log_9 \frac{4y^2}{z^7}$$

$$12. \log_5 6 + 3 \log_5 a + 5 \log_5 b$$

$$\log_5 6a^3b^5$$

$$14. \log_3 c - 4 \log_3 d$$

$$\log_3 \frac{c}{d^4}$$

$$13. (\log_8 x + \log_8 y) - 2 \log_8 z$$

$$\log_8 \frac{xy}{z^2}$$

$$15. 2 \log_9 h + 3 \log_9 k + 5 \log_9 g$$

$$\log_9 h^2 k^3 g^5$$

Evaluate:

$$\log_3 81 = 4$$

$$\log_2 16 = 4$$

$$2 \log_2 16 = 2(4) = 8$$

$$3^{\log_3 7} = 7$$

$$\log_8 1 = 0$$

$$\log_2 \frac{1}{8} = -3$$

$$\log_5 5^6 = 6$$

$$\log 100 = 2$$