

Log Properties

Date _____ Period _____

Expand each logarithm.

1) $\log_4 (6^4 \cdot 7^5)$

2) $\log_8 \left(\frac{6}{11^5} \right)^5$

3) $\log \left(\frac{x}{y^4} \right)^6$

4) $\log_6 \frac{x^6}{y^6}$

Condense each expression to a single logarithm.

5) $3 \log_6 5 - 4 \log_6 3$

6) $5 \log_9 11 - 4 \log_9 6$

7) $2 \log_7 c + \frac{\log_7 a}{3}$

8) $\log_5 a + \log_5 b + 2 \log_5 c$

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Expand each logarithm.

$$1) \log_4 (6^4 \cdot 7^5)$$

$$4\log_4 6 + 5\log_4 7$$

$$2) \log_8 \left(\frac{6}{11^5} \right)^5$$

$$5\log_8 6 - 25\log_8 11$$

$$3) \log \left(\frac{x}{y^4} \right)^6$$

$$6\log x - 24\log y$$

$$4) \log_6 \frac{x^6}{y^6}$$

$$6\log_6 x - 6\log_6 y$$

Condense each expression to a single logarithm.

$$5) 3\log_6 5 - 4\log_6 3$$

$$\log_6 \frac{5^3}{3^4}$$

$$6) 5\log_9 11 - 4\log_9 6$$

$$\log_9 \frac{11^5}{6^4}$$

$$7) 2\log_7 c + \frac{\log_7 a}{3}$$

$$\log_7 (c^2 \sqrt[3]{a})$$

$$8) \log_5 a + \log_5 b + 2\log_5 c$$

$$\log_5 (bac^2)$$