

9.5 CA - Properties of Logarithms

Expand each logarithm.

1) $\ln x^6$

2) $\log_3 \sqrt{x}$

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

4) $\log_4 \left(\frac{u^6}{v} \right)^6$

5) $\log_2 \left(\frac{(z \cdot x)^6}{y} \right)^4$

6) $\log_7 (ab^6 \cdot c)^4$

Condense each expression to a single logarithm.

7) $\log_4 a - \log_4 b$

8) $5 \ln x$

9) $4 \log_2 x + 4 \log_2 y$

10) $2 \log_3 x + 6 \log_3 y$

11) $3 \log_3 z + \frac{\log_3 x}{3} + \frac{\log_3 y}{3}$

12) $5 \log_5 a + 25 \log_5 b + 5 \log_5 c$

Use a calculator to approximate each to the nearest thousandth. Use "change of base" formula to show your work.

13) $\log_6 11$

14) $\log_7 43$

Answers to 9.5 CA - Properties of Logarithms (ID: 1)

1) $6 \ln x$

2) $\frac{\log_3 x}{2}$

3) $2 \log_4 x - 4 \log_4 y$

4) $36 \log_4 u - 6 \log_4 v$

5) $24 \log_2 z + 24 \log_2 x - 4 \log_2 y$

6) $4 \log_7 a + 24 \log_7 b + 4 \log_7 c$

7) $\log_4 \frac{a}{b}$

8) $\ln x^5$

9) $\log_2 (y^4 x^4)$

10) $\log_3 (y^6 x^2)$

11) $\log_3 (z^3 \sqrt[3]{yx})$

12) $\log_5 (c^5 b^{25} a^5)$

13) 1.338

14) 1.933