

Name:

Problem 1: *Simplify the following logarithmic expression completely:*

$$\log_2 \left(\frac{7\sqrt[4]{x^3}}{3y^2} \right)$$

Solution: We have:

$$\begin{aligned} \log_2 \left(\frac{7\sqrt[4]{x^3}}{3y^2} \right) &= \log_2 \left(\frac{7x^{3/4}}{3y^2} \right) \\ &= \log_2 7 + \log_2 (x^{3/4}) - \log_2 3 - \log_2 (y^2) \\ &= \log_2 7 + \frac{3}{4} \log_2 x - \log_2 3 - 2 \log_2 y \end{aligned}$$