

Practice 8-4**HW: Lesson 4****Properties of Logarithms**

Assume that $\log 3 \approx 0.4771$, $\log 4 \approx 0.6021$, and $\log 5 \approx 0.6990$. Use the properties of logarithms to evaluate each expression. Do not use a calculator.

1. $\log 12$

2. $\log \frac{3}{5}$

3. $\log 60$

Write each logarithmic expression as a single logarithm.

4. $\log_5 4 + \log_5 3$

5. $\log_2 4 + \log_2 2 - \log_2 8$

6. $5 \log_7 x - 2 \log_7 x$

7. $\log_4 60 - \log_4 4 + \log_4 x$

8. $2 \log x - 3 \log y$

9. $5 \log 2 - 2 \log 2$

10. $5 \log x + 3 \log x^2$

11. $\log_3 2x - 5 \log_3 y$

Expand each logarithm.

12. $\log xyz$

13. $\log_2 \frac{x}{yz}$

14. $\log 6x^3y$

15. $\log_5 5x^{-5}$

16. $\log \frac{2x^2y}{3k^3}$

17. $\log_4 (3xyz)^2$

18. $\log \frac{5x}{4y}$