

Simplify and evaluate the following expressions by using properties of logarithms

1. $\log_2 2^3$

2. $3^{\log_3 5}$

3. $e^{\ln 2}$

4. $\log 2 + \log 5$

5. $\log_6 2 + \log_6 3$

Write each expression as a sum and/or difference of logarithms. Write exponents as coefficients.

6. $\log ab$

7. $\log_2(xy^2)$

8. $\log_7 \frac{49}{7}$

9. $\log_5(x^2 \sqrt{y^2 + 1})$

10. Find 3 different ways to expand $\log_4 36$

Write each expression as a single logarithm

11. $\log 25 + \log 4$

12. $\log_4 3 - \log_4 x$

13. $\frac{1}{2} \log_3 x + 3 \log_3(x-1)$

14. $\log_8(x^2 - 1) - \log_8(x+1)$

Fill in the blanks WITHOUT a calculator to make each statement true

15. $\log_3 __ + \log_3 __ = \log_3 27$

16. $\log_2 __ - \log_2 __ = \log_2 10$

17. $\log_6 5 = __ \log_6 5 - __ \log_6 5$

Estimate each of the following WITHOUT a calculator

18. $\log_2 10$

19. $\log_8 3$

20. $\log_{\frac{1}{3}} 19$

21. $\log_4 \frac{9}{7}$

Review

Factor completely.

1. $4n^2 + 17n - 15$

2. $4x^2 + 3x - 10$