

State the property or properties of logarithms used to rewrite the expression.

1. $\log_5 6 - \log_5 2 = \log_5 3$

2. $\log_4 7 + \log_4 2 = \log_4 14$

3. $2 \log 6 + \log \frac{1}{3} = \log 12$

Write the expression as a single logarithm.

4. $5 \log_8 q + 2 \log_8 y$

5. $\log_3 4 - \log_3 2$

6. $4 \log x - 6 \log (x + 2)$

Expand the logarithmic expression.

7. $\log_7 \frac{n}{2}$

8. $\log_3 11p^3$

9. $\log_8 \frac{57}{74}$

Use the properties of logarithms to evaluate

10. $\log_3 9 + \log_3 36 - \log_3 4$

11. $\log_5 125 - \log_5 5$

12. $\log_2 4 + \log_2 8$