

Evaluating Logarithmic Expressions

Evaluate each expression.

1) $\log_{\frac{1}{3}} 81 + 3 \log_6 216$

2) $\log_{12} 144 \cdot 3 \log_9 81$

3) $\frac{\log_3 27}{4 \log_{\frac{1}{5}} 25}$

4) $5 \log_2 \left(\frac{1}{8}\right) + \log_8 64$

5) $\log_{\frac{1}{9}} 729 - \log_{\frac{1}{4}} \left(\frac{1}{16}\right)$

6) $\log_{\frac{1}{2}} \left(\frac{1}{32}\right) \cdot 4 \log_{49} 7$

7) $9 \log_8 4 + \log_{\frac{1}{5}} 625$

8) $\frac{1}{2} \log_6 36 - 6 \log_8 2$

9) $\log_{\frac{1}{9}} \left(\frac{1}{81}\right) \cdot \log_{11} 121$

10) $\frac{2 \log_4 2}{7 \log_9 3}$
