

## Evaluating Expressions

Example :

Evaluate the expression :  $\log_{\frac{1}{9}} \left( \frac{1}{81} \right) \cdot 2 \log_4 64$

$$\begin{aligned} \log_{\frac{1}{9}} \left( \frac{1}{81} \right) \cdot 2 \log_4 64 &= 2 \log_{\frac{1}{9}} \left( \frac{1}{9} \right) \cdot 6 \log_4 4 \\ &= 2(1) \cdot 6(1) \\ &= \mathbf{12} \end{aligned}$$

$$\log_a b^c = c \log_a b$$

$$\log_a a = 1$$

**Evaluate each expression.**

1)  $\log_{\frac{1}{5}} \left( \frac{1}{25} \right) \cdot \log_{12} 144$

Answer

2)  $\log_{\frac{1}{2}} 128 + 4 \log_{11} 121$

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3)  $\log_{\frac{1}{2}} 16 - \log_{\frac{1}{6}} \left( \frac{1}{36} \right)$

Answer

5)  $\log_{\frac{1}{5}} \left( \frac{1}{25} \right) \cdot 3 \log_4 64$

Answer

7)  $\frac{1}{8} \log_2 16 - 5 \log_3 27$

Answer

9)  $2 \log_{16} 4 \cdot \log_9 729$

Answer

10)  $\log_4 \left( \frac{1}{4} \right) + 9 \log_7 49$

Answer

