

## Evaluating Expressions

Example :

Evaluate the expression :  $\log_{128} 2^{-3} - 4 \log_{\frac{1}{25}} \left(\frac{1}{5}\right)$

$$\begin{aligned} \log_{128} 2^{-3} - 4 \log_{\frac{1}{25}} \left(\frac{1}{5}\right) &= -\frac{3}{7} \log_{128} 128 - \frac{4}{2} \log_{\frac{1}{25}} \left(\frac{1}{25}\right) \\ &= -\frac{17}{7} \end{aligned}$$

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

$$\log_a a = 1$$

**Evaluate each expression.**

1)  $\frac{2 \log_{27} 3}{9 \log_{64} 4}$

Answer

2)  $\log_{\frac{1}{32}} 2 \cdot 5 \log_3 243$

Answer

3)  $\log_{\frac{1}{36}} 6^3 + \log_2 12$

Answer

5)  $\log_{\frac{1}{4}} \left(\frac{1}{64}\right) \cdot 9 \log_3 27$

Answer

7)  $\log_{\frac{1}{6}} \left(\frac{1}{36}\right) - 5 \log_3 27$

Answer

9)  $\log_{\frac{1}{7}} \left(\frac{1}{49}\right) + 3 \log_{144} 12$

Answer

10)  $\log_{\frac{1}{81}} \left(\frac{1}{3}\right) - 4 \log_9 3$

Answer

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**Evaluating Expressions**

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Example :

Evaluate the expression :  $\log_{128} 2^{-3} - 4 \log_{\frac{1}{25}} \left(\frac{1}{5}\right)$ 

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

$$\log_a a = 1$$

**Evaluate each expression.**

1)  $\frac{2 \log_{27} 3}{9 \log_{64} 4}$

Answer

2)  $\log_{\frac{1}{32}} 2 \cdot 5 \log_3 243$

**-5**

3)  $\log_{\frac{1}{36}} 6^3 + \log_2 12$

Answer

11

5)  $\log_{\frac{1}{4}} \left(\frac{1}{64}\right) \cdot 9 \log_3 27$

Answer

**-2**

7)  $\log_{\frac{1}{6}} \left(\frac{1}{36}\right) - 5 \log_3 27$

Answer

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**4**

9)  $\log_{\frac{1}{7}} \left(\frac{1}{49}\right) + 3 \log_{144} 12$

Answer

 **$\frac{7}{2}$** 

10)  $\log_{\frac{1}{81}} \left(\frac{1}{3}\right) - 4 \log_9 3$

Answer

 **$-\frac{7}{4}$**