

## Evaluating Expressions

L1DS1

Example :

Evaluate the expression :  $\log_{\frac{1}{2}} 8^{-1}$ 

$$\begin{aligned}\log_{\frac{1}{2}} 8^{-1} &= \log_{\frac{1}{2}} \left(\frac{1}{2}\right)^3 \\ &= 3 \log_{\frac{1}{2}} \left(\frac{1}{2}\right) \\ &= 3\end{aligned}$$

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

$$\log_a a = 1$$

**Evaluate each expression.**

1)  $\log_8 \left(\frac{1}{4}\right)$

Answer

2)  $-2 \log_{\frac{1}{9}} 3$

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3)  $\frac{1}{2} \log_2 \left(\frac{1}{64}\right)$

Answer

5)  $\log_{125} 5^{-1}$

Answer

7)  $\log_{\frac{1}{3}} 27^{-2}$

Answer

9)  $4 \log_9 3$

Answer

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

Answer

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**Evaluate each expression.**

1)  $\log_8 \left(\frac{1}{4}\right)$

Answer

2)  $-2 \log_{\frac{1}{9}} 3$

**1**

3)  $\frac{1}{2} \log_2 \left(\frac{1}{64}\right)$

Answer

**-18**

5)  $\log_{125} 5^{-1}$

Answer

**-2**

7)  $\log_{\frac{1}{3}} 27^{-2}$

Answer

**6**

Answer

 **$\frac{1}{3}$** 

9)  $4 \log_9 3$

Answer

**2**

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

Answer

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