Name : _____ Score : _____

L2MS1

Evaluating Expressions

Example :

Evaluate the expression : $\log_{\frac{1}{2}} 4^3 + \log_{\frac{1}{3}} 9$

$\log_{\frac{1}{2}} 4^3 + \log_{\frac{1}{3}} 9 = 3 \log_{\frac{1}{2}} 2^2 + \log_{\frac{1}{3}} 3^2$

$= -6 \log_{\frac{1}{2}} \left(\frac{1}{2}\right) + (-2) \log_{\frac{1}{3}} \left(\frac{1}{3}\right)$

$= \mathbf{-8}$

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

$\log_a a = 1$

Evaluate each expression.

1) $\left(\frac{1}{2}\right) \log_{\frac{1}{5}} 25 - \log_9 3$

Answer

2) $\log_{\frac{1}{4}} \left(\frac{1}{16}\right) \cdot \log_{16} 2$

Answer

3) $\frac{\log_3 27}{4 \log_{\frac{1}{8}} 2}$

Answer

49

5) $\log_{\frac{1}{6}} 216 + \log_{\frac{1}{5}}$

Answer

7) $\log_{\frac{1}{7}} 49 \cdot \log_{\frac{1}{4}} 16$

Answer

Answer

9) $\log_{27} 3 + 6 \log_{\frac{1}{8}} 2$

Answer

10) $\log_8 64 - \log_{\frac{1}{6}} 36$

Answer

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Name : _____ **Answer key** Score : _____

L2MS1

Evaluating Expressions

Example :

Evaluate the expression : $\log_{\frac{1}{2}} 4^3 + \log_{\frac{1}{3}} 9$

$\log_{\frac{1}{2}} 4^3 + \log_{\frac{1}{3}} 9 = 3\log_{\frac{1}{2}} 2^2 + \log_{\frac{1}{3}} 3^2$

$= -6\log_{\frac{1}{2}} \left(\frac{1}{2}\right) + (-2)\log_{\frac{1}{3}} \left(\frac{1}{3}\right)$

$= \mathbf{-8}$

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

$\log_a a = 1$

Evaluate each expression.

1) $\left(\frac{1}{2}\right)\log_{\frac{1}{5}} 25 - \log_9 3$

Answer

2) $\log_{\frac{1}{4}} \left(\frac{1}{16}\right) \cdot \log_{16} 2$

Answer $\frac{1}{2}$

3) $\frac{\log_3 27}{4\log_{\frac{1}{8}} 2}$

Answer

49

Answer $-\frac{13}{3}$

5) $\log_{\frac{1}{6}} 216 + \log_{\frac{1}{5}}$

Answer

Answer -6

7) $\log_{\frac{1}{7}} 49 \cdot \log_{\frac{1}{4}} 16$

Answer 4

Answer -7

9) $\log_{27} 3 + 6\log_{\frac{1}{8}} 2$

Answer $-\frac{5}{3}$

10) $\log_8 64 - \log_{\frac{1}{6}} 36$

Answer 4

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L2MS2

Evaluating Expressions

Example :

Evaluate the expression : $\log_{\frac{1}{4}} 16^{-1} - 5 \log_5 25$

$$\log_{\frac{1}{4}} 16^{-1} - 5 \log_5 25 = 2 \log_{\frac{1}{4}} \left(\frac{1}{4}\right) - 10 \log_5 5$$
$$= 2(1) - 10(1)$$
$$= -8$$

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

$\log_a a = 1$

Evaluate each expression.

1) $\dfrac{5 \log_5 25}{\log_2 32}$

Answer

2) $\log_8 64 \cdot \log_{\frac{1}{3}} \left(\frac{1}{27}\right)$

Answer

3) $\log_3 81 + 3 \log_{\frac{1}{8}}$ 9

Answer

5) $\log_{\frac{1}{2}} \left(\frac{1}{32}\right) \cdot 4 \log$

Answer

7) $\log_{\frac{1}{9}} \left(\frac{1}{81}\right) - 2 \log$ 16

Answer

9) $\log_{\frac{1}{5}} \left(\frac{1}{25}\right) + 6 \log_3 9$

Answer

10) $\log_{\frac{1}{3}} \left(\frac{1}{81}\right) - \log_2 8$

Answer

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L2MS2

Evaluating Expressions

Example :

Evaluate the expression : $\log_{\frac{1}{4}} 16^{-1} - 5\log_5 25$

$\log_{\frac{1}{4}} 16^{-1} - 5\log_5 25 = 2\log_{\frac{1}{4}}\left(\frac{1}{4}\right) - 10\log_5 5$

$= 2(1) - 10(1)$

$= -8$

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

$\log_a a = 1$

Evaluate each expression.

1) $\frac{5\log_5 25}{\log_2 32}$

Answer

2) $\log_8 64 \cdot \log_{\frac{1}{3}}\left(\frac{1}{27}\right)$

Answer 6

3) $\log_3 81 + 3\log_{\frac{1}{8}}$ 9

Answer –8

5) $\log_{\frac{1}{2}}\left(\frac{1}{32}\right) \cdot 4\log$

Answer 7

7) $\log_{\frac{1}{9}}\left(\frac{1}{81}\right) - 2\log$ 16

Answer –2

Answer 8

9) $\log_{\frac{1}{5}}\left(\frac{1}{25}\right) + 6\log_3 9$

Answer 14

10) $\log_{\frac{1}{3}}\left(\frac{1}{81}\right) - \log_2 8$

Answer 1

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L2MS3

Evaluating Expressions

Example :

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

$\log_{\frac{1}{9}}\left(\frac{1}{81}\right) \cdot 2\log_4 64 = 2\log_{\frac{1}{9}}\left(\frac{1}{9}\right) \cdot 6\log_4 4$

$= 2(1) \cdot 6(1)$

$= \mathbf{12}$

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

$\log_a a = 1$

Evaluate each expression.

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

Answer

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

Answer

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

Answer

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

Answer

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

Answer

Answer

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

Answer

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

Answer

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L2MS3

Evaluating Expressions

Example :

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

$\log_{\frac{1}{9}}\left(\frac{1}{81}\right) \cdot 2\log_4 64 = 2\log_{\frac{1}{9}}\left(\frac{1}{9}\right) \cdot 6\log_4 4$

$= 2(1) \cdot 6(1)$

$= \mathbf{12}$

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

$\log_a a = 1$

Evaluate each expression.

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

Answer

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

Answer 1

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

Answer $\frac{4}{3}$

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

Answer –1

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

Answer –2

Answer $-\frac{1}{6}$

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

Answer 3

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

Answer 17

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