Precalculus
Compute logarithm using the rule
$$\log_a(b) + \log_a(c) = \log_a(bc)$$

Todor Milev

2019

Use the properties of logarithms to evaluate the following.

Example

$$\log_4 2 + \log_4 32$$

Example

$$\log_2 80 - \log_2 5$$

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$$\log_4 2 + \log_4 32 \quad = \quad \log_4(2 \cdot 32)$$

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Example

$$\begin{array}{rcl} \log_4 2 + \log_4 32 & = & \log_4(2 \cdot 32) \\ & = & \log_4(64) \end{array}$$

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$$\log_2 80 - \log_2 5$$

Use the properties of logarithms to evaluate the following.

Example

$$\begin{aligned}
\log_4 2 + \log_4 32 &= \log_4(2 \cdot 32) \\
&= \log_4(64) \\
&= \mathbf{?}
\end{aligned}$$

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\begin{aligned}
\log_4 2 + \log_4 32 &= \log_4(2 \cdot 32) \\
&= \log_4(64) \\
&= 3 \\
&\quad \text{(because } 4^3 = 64.\text{)}
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$$\log_2 80 - \log_2 5 \quad = \quad \log_2\left(\frac{80}{5}\right)$$

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$$\begin{aligned} \log_2 80 - \log_2 5 &= \log_2\left(\frac{80}{5}\right) \\ &= \log_2(16) \end{aligned}$$

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