

## Change of Base Formula

$$\log_b x = \frac{\log_a x}{\log_a b}$$

Method 1: Change to a **new base** to evaluate logarithmic numerator and denominator

$$\log_4 8$$

$$\log_3 27$$

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$$\log_{\frac{1}{8}} 32$$

$$\log_9 \frac{1}{81}$$

Method 2: Create a common log with a **new base** equal to 10 and use calculator

$$\log_3 7$$

$$\log_5 14$$

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$$\log_7 9$$

$$\log_{12} 42$$

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$$\log_b x = \frac{\log_a x}{\log_a b}$$

$$\begin{aligned} \text{base} &= b; \text{argument} = x \\ \text{new base} &= a \end{aligned}$$

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Method 2: Create a common log with a new base equal to 10 and use calculator