Precalculus
Compute $\log_a$ via ln

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Recall that $\log_a(x) = \log_b x \log_a b = \frac{\log_b x}{\log_b a} = \frac{\ln x}{\ln a}$.

Example

Using only the ln and arithmetic operations of your calculator, compute $\log_5(13)$. Confirm your answer by exponentiation.

$$\log_5(13) = \frac{\ln 13}{\ln 5} \approx \frac{2.564949357}{1.609437912} \approx 1.593693.$$

As a check of our computations, we compute by calculator:
$13 = 5^{\log_5 13} \approx 5^{1.593693} \approx 13.000007508$, and our computations check out.