

Rules of Logarithm (Log Laws Table)

Name of the Rule	Rule
Product Rule of Logarithm	$\log_a xy = \log_a x + \log_a y$
Power Rule of Logarithm	$\log_a x^y = y \log_a x$
Quotient/Ratio Rule of Logarithm	$\log_a x / y = \log_a x - \log_a y$
Base Switch Rule of Logarithm	$\log_a b = 1 / \log_b a$
Base Change Rule of Logarithm	$\log_a(x) = \log_b(x) / \log_b a$
Derivative of Logarithm	$f(x) = \log_a x \Rightarrow f'(x) = 1 / (x \ln(a))$
Integral of Logarithm	$\int \log_a x \, dx = x (\log_a x - 1 / \ln(a)) + b$
Logarithm of 1	$\log_a 1 = 0$
Logarithm of 0	$\log_a 0$ is undefined
Logarithm of the Base	$\log_a b = 1$
Logarithms of Infinity	$\lim \log_a x = \infty$, when $x \rightarrow \infty$