Expansions for Small Quantities

These truncated Taylor series expansions are valid for argument $x << 1$.

General Functions	$(1-x)^n \approx 1 - nx + n(n-1)x^2/2 - ...$ $e^x \approx 1 + x + x^2/2 + ...$ $\ln(1+x) \approx x - x^2/2 + ...$
Trigonometric Functions	$\sin x \approx x - x^3/6 + ...$ $\cos x \approx 1 - x^2/2 + ...$ $\tan x \approx x + x^3/3...$ $\csc x \approx 1/x + x/6 + ...$ $\sec x \approx 1 + x^2/2 + ...$ $\cot x \approx 1/x - x/3 - ...$
Inverse Trigonometric Functions	$\sin^{-1} x \approx x + x^3/6 + ...$ $\cos^{-1} x \approx \pi/2 - x - ...$ $\tan^{-1} x \approx x - x^3/3 + ...$ $\csc^{-1} x \approx 1/x + 1/(6x^3) + ...$ $\sec^{-1} x \approx \pi/2 - 1/x - ...$ $\cot^{-1} x \approx \pi/2 - x + ...$
Hyperbolic Functions	$\sinh x \approx x + x^3/6 + ...$ $\cosh x \approx 1 + x^2/2 + ...$ $\tanh x \approx x - x^3/3 + ...$ $\text{sech } x \approx x - x^2/2 + ...$ $\text{csch } x \approx 1/x - x/6 + ...$ $\coth x \approx 1/x + x/3 + ...$
Inverse Hyperbolic Functions	$\sinh^{-1} x \approx x - x^3/6 + ...$ $\cosh^{-1} x \approx \ln(2x) - 1/(4x^2) - ...$ $\tanh^{-1} x \approx x + x^3/3 + ...$ $\text{sech}^{-1} x \approx \ln(2/x) - x^2/4 - ...$ $\text{csch}^{-1} x \approx 1/x - 1/(6x^3) + ...$ $\coth^{-1} x \approx 1/x + 1/(3x^3) + ...$