Maclaurin Series

$$f(x) = f(0) + \frac{f'(0)}{1!}\cdot x + \frac{f^{(2)}(0)}{2!}\cdot x^2 + \frac{f^{(3)}(0)}{3!}\cdot x^3 + \cdots + \frac{f^{(n)}(0)}{n!}\cdot x^n + \cdots$$

First few terms of the Maclaurin Series	Maclaurin Series	Interval of Convergence
$\frac{1}{1-x} = 1 + x + x^2 + x^3 + x^4 + \cdots + x^n + \cdots$	$\sum_{n=0}^{\infty} x^n$	$\|x\| < 1$
$e^x = 1 + x + \frac{x^2}{2!} + \frac{x^3}{3!} + \cdots + \frac{x^n}{n!} + \cdots$	$\sum_{n=0}^{\infty} \frac{x^n}{n!}$	All x
$\ln(1+x) = x - \frac{x^2}{2} + \frac{x^3}{3} - \frac{x^4}{4} \ldots + \frac{(-1)^{n-1}x^n}{n} + \cdots$	$\sum_{n=1}^{\infty} \frac{(-1)^{n-1}x^n}{n}$	$-1 < x \leq 1$
$-\ln(1-x) = x + \frac{x^2}{2} + \frac{x^3}{3} + \frac{x^4}{4} \ldots + \frac{x^n}{n} + \cdots$	$\sum_{n=1}^{\infty} \frac{x^n}{n}$	$-1 \leq x < 1$
$\sin x = x - \frac{x^3}{3!} + \frac{x^5}{5!} - \frac{x^7}{7!} \ldots + \frac{(-1)^n x^{2n+1}}{(2n+1)!} + \cdots$	$\sum_{n=0}^{\infty} \frac{(-1)^n x^{2n+1}}{(2n+1)!}$	All x
$\sinh x = x + \frac{x^3}{3!} + \frac{x^5}{5!} + \frac{x^7}{7!} \ldots + \frac{x^{2n+1}}{(2n+1)!} + \cdots$	$\sum_{n=0}^{\infty} \frac{x^{2n+1}}{(2n+1)!}$	All x
$\cos x = 1 - \frac{x^2}{2!} + \frac{x^4}{4!} - \frac{x^6}{6!} \ldots + \frac{(-1)^n x^{2n}}{(2n)!} + \cdots$	$\sum_{n=0}^{\infty} \frac{(-1)^n x^{2n}}{(2n)!}$	All x
$\cosh x = 1 + \frac{x^2}{2!} + \frac{x^4}{4!} + \frac{x^6}{6!} \ldots + \frac{x^{2n}}{(2n)!} + \cdots$	$\sum_{n=0}^{\infty} \frac{x^{2n}}{(2n)!}$	All x
$\sin^{-1} x = x + \frac{1}{2.3}x^3 + \frac{1\cdot 3}{2\cdot 4\cdot 5}x^5 + \frac{1\cdot 3\cdot 5}{2\cdot 4\cdot 6\cdot 7}x^7 + \cdots$	$x + \sum_{n=1}^{\infty} \frac{1\cdot 3\cdot 5 \cdots (2n-1)x^{2n+1}}{2\cdot 4\cdot 6 \cdots (2n)\cdot(2n+1)}$	$\|x\| < 1$
$\cos^{-1} x = \frac{\pi}{2} - x - \frac{1}{2.3}x^3 - \frac{1\cdot 3}{2\cdot 4\cdot 5}x^5 - \frac{1\cdot 3\cdot 5}{2\cdot 4\cdot 6\cdot 7}x^7 + \cdots$	$\frac{\pi}{2} - x - \sum_{n=1}^{\infty} \frac{1\cdot 3\cdot 5 \cdots (2n-1)x^{2n+1}}{2\cdot 4\cdot 6 \cdots (2n)\cdot(2n+1)}$	$\|x\| < 1$
$\tan^{-1} x = x - \frac{x^3}{3} + \frac{x^5}{5} - \frac{x^7}{7} \ldots + \frac{(-1)^n x^{2n+1}}{2n+1} + \cdots$	$\sum_{n=0}^{\infty} \frac{(-1)^n x^{2n+1}}{(2n+1)}$	$\|x\| < 1$
$\tanh^{-1} x = x + \frac{x^3}{3} + \frac{x^5}{5} + \frac{x^7}{7} \ldots + \frac{x^{2n+1}}{2n+1} + \cdots$	$\sum_{n=0}^{\infty} \frac{x^{2n+1}}{(2n+1)}$	$\|x\| \leq 1$
$\cot^{-1} x = \frac{\pi}{2} - x + \frac{x^3}{3} - \frac{x^5}{5} + \frac{x^7}{7} \ldots + \frac{(-1)^n x^{2n+1}}{(2n+1)} + \cdots$	$\frac{\pi}{2} - \sum_{n=0}^{\infty} \frac{(-1)^n x^{2n+1}}{(2n+1)}$	$\|x\| \leq 1$
$(1+x)^p = 1 + p\cdot\frac{x}{1!} + \frac{p\cdot(p-1)}{2!}x^2 + \cdots + \frac{p(p-1)(p-2)\ldots(p-n+1)}{n!} + \cdots$		$\|x\| < 1$
$\tan x = x + \frac{1}{3}x^3 + \frac{2}{15}x^5 + \frac{17}{315}x^7 + \frac{62}{2835}x^9 + \cdots$		$\|x\| < \frac{\pi}{2}$
$\tanh x = x - \frac{1}{3}x^3 + \frac{2}{15}x^5 - \frac{17}{315}x^7 + \frac{62}{2835}x^9 + \cdots$		$\|x\| < \frac{\pi}{2}$
$\csc x = \frac{1}{x} + \frac{1}{6}x + \frac{7}{360}x^3 + \frac{31}{15120}x^5 + \frac{127}{604800}x^7 + \cdots$		$0 < \|x\| < \pi$
$\sec x = 1 + \frac{1}{2}x^2 + \frac{5}{24}x^4 + \frac{61}{720}x^6 + \frac{277}{8064}x^8 + \cdots$		$\|x\| < \frac{\pi}{2}$
$\cot x = \frac{1}{x} - \frac{1}{3}x - \frac{1}{45}x^3 - \frac{2}{945}x^5 - \frac{1}{4725}x^7 - \cdots$		$0 < \|x\| < \pi$