

Series Expansion Of Trigonometric And Hyperbolic Functions

$\sin x = x - \frac{x^3}{3!} + \frac{x^5}{5!} - \frac{x^7}{7!} + \dots,$
$\cos x = 1 - \frac{x^2}{2!} + \frac{x^4}{4!} - \frac{x^6}{6!} + \frac{x^8}{8!} - \dots$
$\tan x = x + \frac{x^3}{3} + 2\frac{x^5}{15} + 17\frac{x^7}{315} + 62\frac{x^9}{2835} + \dots$
$\cot x = \frac{1}{x} - \frac{x}{3} - \frac{x^3}{45} - 2\frac{x^5}{945} - \frac{x^7}{4725} - \dots$
$\sin^{-1} x = x + \frac{x^3}{6} + 3\frac{x^5}{40} + 5\frac{x^7}{112} + \dots$
$\tan^{-1} x = x - \frac{x^3}{3} + \frac{x^5}{5} - \frac{x^7}{7} + \dots$
$\cos^{-1} x = \frac{\pi}{2} - \sin^{-1} x$
$\cot^{-1} x = \frac{\pi}{2} - \tan^{-1} x$
$\sinh x = x + \frac{x^3}{3!} + \frac{x^5}{5!} + \frac{x^7}{7!} + \dots$
$\cosh x = 1 + \frac{x^2}{2!} + \frac{x^4}{4!} + \frac{x^6}{6!} + \dots$
$\sinh^{-1} x = x - \frac{x^3}{6} + 3\frac{x^5}{40} - 5\frac{x^7}{112} + \dots$
$\tanh^{-1} x = x + \frac{x^3}{3} + \frac{x^5}{5} + \frac{x^7}{7} + \dots$