Maclaurin Series

$$\begin{aligned}
& e^x && = 1 + x + \frac{1}{2}x^2 + o(x^2) && = \sum_{n=0}^{\infty} \frac{1}{n!}x^n,\ x \in (-\infty, +\infty) && (1) \\
& \sin x && = x - \frac{1}{6}x^3 + o(x^3) && = \sum_{n=0}^{\infty} \frac{(-1)^n}{(2n+1)!}x^{2n+1},\ x \in (-\infty, +\infty) && (2) \\
\overset{Derivation}{\Longrightarrow} & \cos x && = 1 - \frac{1}{2}x^2 + o(x^3) && = \sum_{n=0}^{\infty} \frac{(-1)^n}{(2n)!}x^{2n},\ x \in (-\infty, +\infty) && (3) \\
& \arcsin x && = x + \frac{1}{6}x^3 + o(x^3) && = \sum_{n=0}^{\infty} \frac{(2n)!}{4^n(n!)^2(2n+1)}x^{2n+1},\ x \in [-1, 1] && (4) \\
& \tan x && = x + \frac{1}{3}x^3 + o(x^3) && = \sum_{n=1}^{\infty} \frac{B_{2n}(-4)^n(1-4^n)}{(2n)!}x^{2n-1},\ x \in (-\frac{\pi}{2}, \frac{\pi}{2}) && (5) \\
& \arctan x && = x - \frac{1}{3}x^3 + o(x^3) && = \sum_{n=0}^{\infty} \frac{(-1)^n}{2n+1}x^{2n+1},\ x \in [-1, 1] && (6) \\
& (1+x)^\alpha && = 1 + \alpha x + \frac{\alpha(\alpha-1)}{2}x^2 + o(x^2) && = \sum_{n=0}^{\infty} C_\alpha^n x^n,\ x \in (-1, 1) && (7) \\
& \ln(1+x) && = x - \frac{1}{2}x^2 + o(x^2) && = \sum_{n=0}^{\infty} \frac{(-1)^n}{n+1}x^{n+1},\ x \in (-1, 1] && (8) \\
\overset{Derivation}{\Longrightarrow} & \frac{1}{1+x} && = 1 - x + x^2 + o(x^2) && = \sum_{n=0}^{\infty} (-1)^n x^n,\ x \in (-1, 1) && (9) \\
\overset{x\to(-x)}{\Longrightarrow} & \frac{1}{1-x} && = 1 + x + x^2 + o(x^2) && = \sum_{n=0}^{\infty} x^n,\ x \in (-1, 1) && (10)
\end{aligned}$$