DL usuels

$$e^x = 1 + \frac{x}{1!} + \frac{x^2}{2!} + \cdots + \frac{x^n}{n!} + \underset{x\to 0}{o}(x^n) = \sum_{k=0}^{n} \frac{x^k}{k!} + \underset{x\to 0}{o}(x^n)$$

$$\mathrm{ch}(x) = 1 + \frac{x^2}{2!} + \frac{x^4}{4!} + \cdots + \frac{x^{2n}}{(2n)!} + \underset{x\to 0}{o}(x^{2n+1}) = \sum_{k=0}^{n} \frac{x^{2k}}{(2k)!} + \underset{x\to 0}{o}(x^{2n+1})$$

$$\mathrm{sh}(x) = x + \frac{x^3}{3!} + \frac{x^5}{5!} + \cdots + \frac{x^{2n+1}}{2n+1!} + \underset{x\to 0}{o}(x^{2n+2}) = \sum_{k=0}^{n} \frac{x^{2k+1}}{(2k+1)!} + \underset{x\to 0}{o}(x^{2n+2})$$

$$\cos(x) = 1 - \frac{x^2}{2!} + \frac{x^4}{4!} + \cdots + (-1)^n \frac{x^{2n}}{(2n)!} + \underset{x\to 0}{o}(x^{2n+1}) = \sum_{k=0}^{n} (-1)^k \frac{x^{2k}}{(2k)!} + \underset{x\to 0}{o}(x^{2n+1})$$

$$\sin(x) = x - \frac{x^3}{3!} + \frac{x^5}{5!} + \cdots + (-1)^n \frac{x^{2n+1}}{(2n+1)!} + \underset{x\to 0}{o}(x^{2n+2}) = \sum_{k=0}^{n} (-1)^k \frac{x^{2k+1}}{(2k+1)!} + \underset{x\to 0}{o}(x^{2n+2})$$

$$\tan(x) = x + \frac{x^3}{3} + \underset{x\to 0}{o}(x^3)$$

$$(1+x)^\alpha = 1 + \alpha\, x + \cdots + \frac{\alpha\,(\alpha-1)\,\cdots\,(\alpha-n+1)}{n!}\, x^n + \underset{x\to 0}{o}(x^n)$$

$$= \sum_{k=0}^{n} \frac{\alpha\,(\alpha-1)\,\cdots\,(\alpha-k+1)}{k!}\, x^k + \underset{x\to 0}{o}(x^n)$$

$$\frac{1}{1-x} = 1 + x + x^2 + \cdots + x^n + \underset{x\to 0}{o}(x^n) = \sum_{k=0}^{n} x^k + \underset{x\to 0}{o}(x^n)$$

$$\frac{1}{1+x} = 1 - x + x^2 + \cdots + (-1)^n\, x^n + \underset{x\to 0}{o}(x^n) = \sum_{k=0}^{n} (-1)^k\, x^k + \underset{x\to 0}{o}(x^n)$$

$$\ln(1+x) = x - \frac{x^2}{2} + \frac{x^3}{3} + \cdots + (-1)^{n-1} \frac{x^n}{n} + \underset{x\to 0}{o}(x^n) = \sum_{k=1}^{n} (-1)^{k-1} \frac{x^k}{k} + \underset{x\to 0}{o}(x^n)$$

$$\arctan(x) = x - \frac{x^3}{3} + \frac{x^5}{5} + \cdots + (-1)^n \frac{x^{2n+1}}{(2n+1)} + \underset{x\to 0}{o}(x^{2n+2}) = \sum_{k=0}^{n} (-1)^k \frac{x^{2k+1}}{(2k+1)} + \underset{x\to 0}{o}(x^{2n+2})$$