

Sviluppi di Mc-Laurin notevoli

$$(1) \quad \sin x = x - \frac{x^3}{3!} + \frac{x^5}{5!} - \cdots + (-1)^n \frac{x^{2n+1}}{(2n+1)!} + o(x^{2n+2})$$

$$(2) \quad \cos x = 1 - \frac{x^2}{2!} + \frac{x^4}{4!} - \cdots + (-1)^n \frac{x^{2n}}{(2n)!} + o(x^{2n+1})$$

$$(3) \quad \sinh x = x + \frac{x^3}{3!} + \frac{x^5}{5!} + \cdots + \frac{x^{2n+1}}{(2n+1)!} + o(x^{2n+2})$$

$$(4) \quad \cosh x = 1 + \frac{x^2}{2!} + \frac{x^4}{4!} + \cdots + \frac{x^{2n}}{(2n)!} + o(x^{2n+1})$$

$$(5) \quad e^x = 1 + x + \frac{x^2}{2!} + \cdots + \frac{x^n}{n!} + o(x^{n+1})$$

$$(6) \quad \tan x = x + \frac{1}{3}x^3 + \frac{2}{15}x^5 + o(x^6)$$

$$(7) \quad \arctan x = x - \frac{1}{3}x^3 + \frac{1}{5}x^5 - \cdots + (-1)^n \frac{x^{2n+1}}{2n+1} + o(x^{2n+2})$$

$$(8) \quad \tanh x = x - \frac{1}{3}x^3 + \frac{2}{15}x^5 + o(x^6)$$

$$(9) \quad \text{Sett } \tanh x = x + \frac{1}{3}x^3 + \frac{1}{5}x^5 - \cdots + \frac{x^{2n+1}}{2n+1} + o(x^{2n+2})$$

$$(10) \quad \ln(1+x) = x - \frac{1}{2}x^2 + \frac{1}{3}x^3 - \frac{1}{4}x^4 + \cdots + (-1)^n \frac{x^{n+1}}{n+1} + o(x^{n+1})$$

$$(11) \quad (1+x)^\alpha = 1 + \alpha x + \binom{\alpha}{2} x^2 + \cdots + \binom{\alpha}{n} x^n + o(x^{n+1}),$$

$$\text{dove } \alpha \in \mathbb{R} \text{ e } \binom{\alpha}{n} = \frac{\alpha(\alpha-1)\cdots(\alpha-n+1)}{n!}$$