TAVOLA DEGLI SVILUPPI DI TAYLOR,
DI PUNTO INIZIALE $x_0 = 0$,
DI ALCUNE FUNZIONI ELEMENTARI

$$e^x = 1 + x + \frac{x^2}{2} + \frac{x^3}{3!} + \ldots + \frac{x^n}{n!} + o(x^n)$$

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

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

$$\tan x = x + \frac{x^3}{3} + \frac{2}{15}x^5 + \frac{17}{315}x^7 + o(x^8)$$

$$\log(1+x) = x - \frac{x^2}{2} + \frac{x^3}{3} + \ldots + (-1)^{n+1} \frac{x^n}{n} + o(x^n)$$

$$\frac{1}{1-x} = 1 + x + x^2 + \ldots + x^n + o(x^n)$$

$$\arcsin x = x + \frac{x^3}{6} + \frac{3}{40}x^5 + \ldots + \frac{(2n-1)!!}{(2n)!!} \frac{x^{2n+1}}{2n+1} + o(x^{2n+2})$$

$$\arccos x = \frac{\pi}{2} - x - \frac{x^3}{6} - \frac{3}{40}x^5 - \ldots - \frac{(2n-1)!!}{(2n)!!} \frac{x^{2n+1}}{2n+1} + o(x^{2n+2})$$

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

$$(1+x)^\alpha = 1 + \alpha x + \frac{\alpha(\alpha-1)}{2}x^2 + \ldots + \binom{\alpha}{n} x^n + o(x^n)$$

$$\text{con } \binom{\alpha}{n} = \frac{\alpha(\alpha-1)(\alpha-2)\cdots(\alpha-n+1)}{n!}$$

Per esempio :

$$\sqrt{1+x} = 1 + \frac{x}{2} - \frac{x^2}{8} + \frac{x^3}{16} + \ldots + (-1)^{n+1} \frac{(2n-3)!!}{(2n)!!} x^n + o(x^n) \quad (n \geq 1)$$

$$\frac{1}{\sqrt{1+x}} = 1 - \frac{x}{2} + \frac{3}{8}x^2 - \frac{15}{48}x^3 + \ldots + (-1)^n \frac{(2n-1)!!}{(2n)!!} x^n + o(x^n)$$