

TAVOLA DEGLI SVILUPPI DI TAYLOR DELLE FUNZIONI ELEMENTARI PER $x \rightarrow 0$.

$$\begin{aligned}
e^x &= 1 + x + \frac{x^2}{2} + \frac{x^3}{6} + \dots + \frac{x^n}{n!} + o(x^n) \\
\sin x &= x - \frac{x^3}{6} + \frac{x^5}{5!} + \dots + \frac{(-1)^n}{(2n+1)!} x^{2n+1} + o(x^{2n+2}) \\
\cos x &= 1 - \frac{x^2}{2} + \frac{x^4}{4!} + \dots + \frac{(-1)^n}{(2n)!} x^{2n} + o(x^{2n+1}) \\
\tan x &= x + \frac{x^3}{3} + \frac{2}{15}x^5 + \frac{17}{315}x^7 + \frac{62}{2835}x^9 + o(x^{10}) \\
\sinh x &= x + \frac{x^3}{6} + \frac{x^5}{5!} + \dots + \frac{x^{2n+1}}{(2n+1)!} + o(x^{2n+2}) \\
\cosh x &= 1 + \frac{x^2}{2} + \frac{x^4}{4!} + \dots + \frac{x^{2n}}{(2n)!} + o(x^{2n+1}) \\
\tanh x &= x - \frac{x^3}{3} + \frac{2}{15}x^5 - \frac{17}{315}x^7 + \frac{62}{2835}x^9 + o(x^{10}) \\
\frac{1}{1-x} &= 1 + x + x^2 + x^3 + \dots + x^n + o(x^n) \\
\log(1+x) &= x - \frac{x^2}{2} + \frac{x^3}{3} + \dots + \frac{(-1)^{n+1}}{n} x^n + o(x^n) \\
\arctan x &= x - \frac{x^3}{3} + \frac{x^5}{5} + \dots + \frac{(-1)^n}{2n+1} x^{2n+1} + o(x^{2n+2}) \\
\operatorname{arctanh} x &= x + \frac{x^3}{3} + \frac{x^5}{5} + \dots + \frac{x^{2n+1}}{2n+1} + o(x^{2n+2}) \\
(1+x)^\alpha &= 1 + \alpha x + \frac{\alpha(\alpha-1)}{2} x^2 + \frac{\alpha(\alpha-1)(\alpha-2)}{6} x^3 + \dots + \binom{\alpha}{n} x^n + o(x^n)
\end{aligned}$$

con

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