BROOK TAYLOR
1685 - 1731

Quando $x \to 0$:

$$f(x) = f(0) + f'(0)x + \frac{f''(0)}{2!}x^2 + \ldots + \frac{f^{(n)}(0)}{n!}x^n + o(x^n)$$

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

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

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

$$\cos x = 1 - \frac{x^2}{2!} + \frac{x^4}{4!} - \frac{x^6}{6!} - \ldots + (-1)^n\frac{x^{2n}}{(2n)!} + o(x^{2n})$$

$$\sin x = x - \frac{x^3}{3!} + \frac{x^5}{5!} - \frac{x^7}{7!} - \ldots + (-1)^n\frac{x^{2n+1}}{(2n+1)!} + o(x^{2n+1})$$

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

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

Ricorda l'o-piccolo!

Quando $f(x) = o(g(x))$ (e.g. $x^3 = o(x^2)$):

$$o(f(x)) + o(g(x)) = f(x) + o(g(x)) = o(g(x))$$

$$o(f(x))\, o(g(x)) = f(x)\, o(g(x)) = o(f(x)g(x))$$

$$(g(x) + o(f(x)))^n = g(x)^n + o(g^{n-1}(x)\, f(x))$$