Analisi Matematica 1

Sviluppi notevoli al primo ordine (Successioni)

Supponiamo che $\varepsilon_n \neq 0$ e $\varepsilon_n \to 0$.

- $e^{\varepsilon_n} = 1 + \varepsilon_n + o(\varepsilon_n)$
- $\sin \varepsilon_n = \varepsilon_n + o\left((\varepsilon_n)^2\right)$
- $\cos \varepsilon_n = 1 - \frac{(\varepsilon_n)^2}{2!} + o\left((\varepsilon_n)^3\right)$
- $\sinh \varepsilon_n = \varepsilon_n + o\left((\varepsilon_n)^2\right)$
- $\cosh \varepsilon_n = 1 + \frac{(\varepsilon_n)^2}{2!} + o\left((\varepsilon_n)^3\right)$
- $\log(1 + \varepsilon_n) = \varepsilon_n + o(\varepsilon_n)$
- $(1 + \varepsilon_n)^\alpha = 1 + \alpha\varepsilon_n + o(\varepsilon_n)$

  In particolare, per $\alpha = -1$ e $\alpha = \frac{1}{2}$ si ottiene

  $$\frac{1}{1 + \varepsilon_n} = 1 - \varepsilon_n + o(\varepsilon_n)$$
  $$\sqrt{1 + \varepsilon_n} = 1 + \tfrac{1}{2}\varepsilon_n + o(\varepsilon_n)$$

- $\arctan \varepsilon_n = \varepsilon_n + o\left((\varepsilon_n)^2\right)$
- $\arcsin \varepsilon_n = \varepsilon_n + o\left((\varepsilon_n)^2\right)$
- $\tan \varepsilon_n = \varepsilon_n + o\left((\varepsilon_n)^2\right)$