GEOMETRICA

$$q^{n-1}\begin{cases}\text{div. pos} & \text{se } q\ge 1\\ \text{con } \frac{1}{1-q} & \text{se } -1<q<1\\ \text{oscilla} & \text{se } q\le -1\end{cases}$$

TELESCOPICA

$x_1-\ell$, se $\lim x_n=\ell$

div pos, se $\lim x_n = +\infty$

oscilla, se $\nexists \lim$

MENGOLI

$\frac{1}{n(n+1)}$

conv. a 1

ESPONENZIALE

$\frac{x^{n-1}}{(n-1)!} = e^x$

ARM. GENER.

$\frac{1}{n^\alpha}$

se $\lim$ $\alpha<0$ div; $\alpha=0$, $=1$; $\alpha>0$ $=0$

FATTORIALI

$n! = (n-1)!\,n$

$(n+1)! = (n+1)\,n!$

$(n+2)! = (n+2)(n+1)!$

$(n-2)! = (2n-2)(2n-1)! \neq n!$

RAPPORTO

$\lim \frac{a_{n+1}}{a_n}$

$\ell<1$ conv. decrescente

$\ell>1$ div. pos crescente

RADICE

$\lim \sqrt[n]{a_n}$

$\ell<1$ conv. $\lim \sqrt[n]{n}=1$

$\ell>1$ div

RAABE

$\lim n\left(\frac{a_n}{a_{n+1}}-1\right)$

$\ell<1$ o $-\infty$, div pos

$\ell>1$ o $+\infty$ conv

ASSOLUTA CONV

se $\lim |a_n| = 0$

potrebbe conv.

"confronto con un criterio

LIMITI SERIE GEOM

$$\lim q^n=\begin{cases}+\infty & q>1\\ 1 & q=1\\ 0 & -1<q<1\\ \nexists & q\le -1\end{cases}$$

INFINITESIMI

$\lim n^\alpha a_n$

$\ell>0$, $\begin{cases}\text{conv.} & \alpha>1\\ \text{div.pos} & \alpha\le 1\end{cases}$

$\ell=0$, $\alpha>1$ conv.

$\ell=+\infty$ $\alpha\le 1$ div. pos

COROLLARIO 1

$\sum a_n$ a segni alterni

$\{|a_n|\}$ crescenti

$\Rightarrow \sum a_n$ oscillante

LEIBNIZ

$\sum a_n$ a segni alt.

$\{|a_n|\}$ decrescente

$\lim a_n=0$ conv.

$\lim a_n\neq 0$ $\nexists$ oscilla

C. ASINTOTICI

- $\sin t \sim t$ $\quad t\to 0$
- $\operatorname{tg} t \sim t$
- $\operatorname{arctg} t \sim t$
- $1-\cos t \sim \frac{1}{2}t^2$
- $\log(1+t) \sim t$
- $\frac{e^t-1}{t} \sim t$

LIMITI STRANI

- $\lim_{n\to+\infty} \arctan(n) = \frac{\pi}{2}$
- $\lim_{n\to 0} \arctan(n) = 0$
- $\lim_{n\to+\infty} \tan(n) = \nexists$
- $\lim_{n\to 0} \tan(n) = 0$