serij

domenica 5 novembre 2023 16:42

$$\sum_{n=1}^{+\infty} \frac{1}{n}$$ Diverge a $+\infty$

$$\sum_{n=1}^{+\infty} x^n \quad \begin{cases} \text{Converge se } -1 < x < +1 \\ \text{diverge a } +\infty \text{ se } x \geq +1 \\ \text{irregolare se } x \leq 1 \end{cases}$$

$$\sum_{n=1}^{+\infty} \frac{1}{n^a} \quad \begin{cases} \text{Converge se } a > 1 \\ \text{diverge se } a \leq 1 \end{cases}$$

Teorema di Leibniz

se $a_n \geq 0$, $a_{n+1} \leq a_n$, $a_n \to +\infty$

$$\sum_{n=1}^{+\infty} (-1)^n a_n$$ Converge

Teorema Radice $\lim \sqrt[n]{a_n} = l$ $\begin{cases} l < 1 & \text{Converge} \\ l > 1 & \text{diverge} \end{cases}$

Teorema Confronto a_n b_n $0 \leq a_n \leq b_n$

Del rapporto $\frac{a_n+1}{a_n}$

es

$$\sum \frac{2^n}{n!}$$

$$\frac{2^n}{n!} \to 0$$

$$\lim \frac{2^{n+1}}{(n+1)!} \cdot \frac{n!}{2^n} \qquad \lim \frac{2 \cdot 2^n}{(n+1)\cancel{n!}} \cdot \frac{\cancel{n!}}{\cancel{2^n}} = \frac{2}{n+1} = 0$$