

CAJTEMI COMPARTO

$$0 \leq 2n \leq b_n \quad \forall n$$

$$\bullet \sum_{n=1}^{\infty} b_n \text{ converge} \rightarrow \sum_{n=1}^{\infty} a_n \text{ converge}$$

$$\bullet \sum_{n=1}^{\infty} a_n \text{ diverge pos.} \rightarrow \sum_{n=1}^{\infty} b_n \text{ diverge pos.}$$

Comparto eintorno

$$\sum_{n=1}^{\infty} a_n \quad \sum_{n=1}^{\infty} b_n \quad a_n \geq 0 \quad b_n \geq 0$$

$$\bullet \lim \frac{a_n}{b_n} = l > 0 \quad a_n \text{ e } b_n \text{ termo castor}$$

$$\bullet \lim \frac{a_n}{b_n} = 0 \quad b_n \text{ converge} \rightarrow a_n \text{ converge}$$

$$\bullet \lim \frac{a_n}{b_n} = +\infty \quad b_n \text{ diverge} \rightarrow a_n \text{ diverge}$$

Rapporto

$$\sum_{n=1}^{\infty} a_n$$

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

$$\left| \begin{array}{ll} l < 1 & a_n \text{ converge} \\ l > 1, l = +\infty & a_n \text{ diverge} \\ l = 0 & \text{Both} \end{array} \right.$$

Radice

$$\sum_{n=1}^{\infty} a_n$$

$$a_n \geq 0$$

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

$$\left| \begin{array}{ll} l < 1 & a_n \text{ converge} \\ l > 1, l = +\infty & a_n \text{ diverge} \\ l = 1 & \text{Both} \end{array} \right.$$

Radice

$$\sum_{n=1}^{\infty} a_n \quad a_n \geq 0$$

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

$$l < 1, l = -\infty \quad a_n \text{ diverge pos.}$$

$$l > 1, l = +\infty \quad a_n \text{ converge}$$

$$l = 1 \quad \text{Both}$$

Infinito di

$$\sum_{n=1}^{\infty} a_n \quad a_n \geq 0$$

$$n^\alpha a_n$$

$$\bullet \lim n^\alpha a_n = l > 0$$

$$a_n \text{ converge} \quad \alpha > 1$$

$$a_n \text{ diverge} \quad \alpha \leq 1$$

$$\bullet \lim n^\alpha a_n = 0 \quad \alpha > 1$$

$$a_n \text{ converge}$$

$$\bullet \lim n^\alpha a_n = +\infty \quad \alpha \leq 1$$

$$a_n \text{ diverge pos.}$$

Teste

$$\text{Se } a_n \text{ converge} \Rightarrow \text{Se } a_n \text{ converge}$$

Teste

$$\sum_{n=1}^{\infty} a_n \quad a_n \text{ regni}$$

$$\text{alterni}$$

$$\{|a_n|\} \text{ monotone}$$

$$\rightarrow \text{Se } a_n \text{ non}$$

$$\text{diverge}$$

Corollario 1

$$\sum_{n=1}^{\infty} a_n \quad a_n \text{ regni}$$

$$\{|a_n|\} \text{ crescente}$$

$$\rightarrow \sum_{n=1}^{\infty} a_n \text{ oscillante}$$

Leibniz

$$\sum_{n=1}^{\infty} a_n \quad a_n \text{ regni}$$

$$\text{alterni}$$

$$\{|a_n|\}$$

$$\text{decrecente}$$

$$\lim a_n \neq 0 \quad \sum_{n=1}^{\infty} a_n \text{ oscill}$$

$$\lim a_n = 0 \quad \sum_{n=1}^{\infty} a_n \text{ converge}$$