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Ratio Test

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

Condition of Convergence:

$$\lim_{n\to\infty} \left|\frac{a_{n+1}}{a_n}\right| < 1$$

Condition of Divergence:

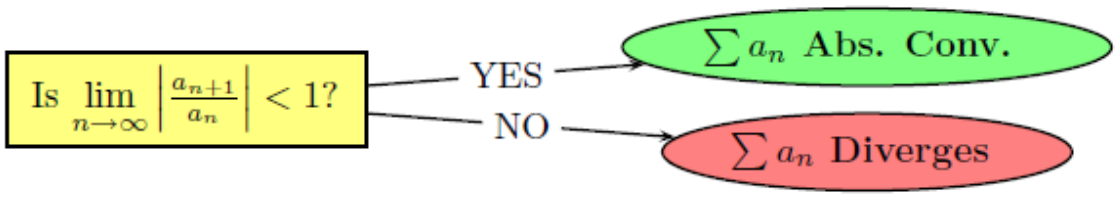
$$\lim_{n\to\infty} \left|\frac{a_{n+1}}{a_n}\right| > 1$$

* Test *inconclusive* if

$$\lim_{n\to\infty} \left|\frac{a_{n+1}}{a_n}\right| = 1$$

RATIO TEST

Is $\lim_{n\to\infty} |a_{n+1}/a_n| \neq 1$? — YES



Ratio Test: Let $\sum a_n$ be a series with nonzero terms.

i) If $\lim_{n\to\infty}\left|\frac{a_{n+1}}{a_n}\right| < 1$, then the series converges absolutely.

ii) If $\lim_{n\to\infty}\left|\frac{a_{n+1}}{a_n}\right| > 1$, then the series is divergent.

iii) If $\lim_{n\to\infty}\left|\frac{a_{n+1}}{a_n}\right| = 1$, then the test is inconclusive (and another test must be used).