

COMPARISON TESTS FOR INFINITE SERIES.

Use only for series with positive terms or for testing absolute convergence.

TEST #1. Assume $\{a_n\}_1^\infty$ and $\{b_n\}_1^\infty$ satisfy the condition

$(*) \quad 0 < a_n \leq b_n$

 for all $n \geq N$.

Then

(1) $\sum_1^\infty b_n$ converges $\Rightarrow \sum_1^\infty a_n$ converges.

(2) $\sum_1^\infty a_n$ diverges $\Rightarrow \sum_1^\infty b_n$ diverges

TEST #2. Assume $\{a_n\}_1^\infty$ and $\{b_n\}_1^\infty$ satisfy the conditions that $a_n > 0$, $b_n > 0$ and

$(*) \quad \lim_{n \rightarrow \infty} \frac{a_n}{b_n} = l$

 and $0 < l < +\infty$.

Then $\sum_1^\infty a_n$ and $\sum_1^\infty b_n$ either both converge

or both diverge $(1-\epsilon) \leq \frac{a_n}{b_n} \leq (1+\epsilon)$