

Direct Comparison

a series with terms **smaller** than a known convergent series also converges
a series with terms **larger** than a known divergent series also diverges

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Direct Comparison Test

$$(a_n, b_n > 0)$$

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

Condition of Convergence:

$$0 < a_n \leq b_n$$

and $\sum_{n=0}^{\infty} b_n$ is absolutely
convergent

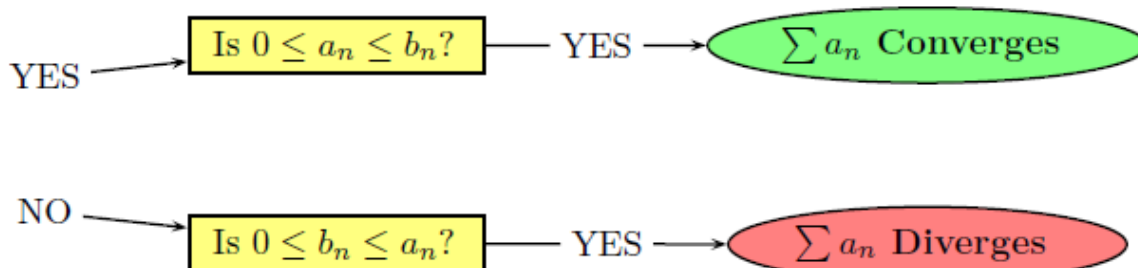
Condition of Divergence:

$$0 < b_n \leq a_n$$

and $\sum_{n=0}^{\infty} b_n$ diverges

COMPARISON TEST

Pick $\{b_n\}$. Does $\sum b_n$ converge?



Comparison Test: If $0 \leq a_n \leq b_n$ for all sufficiently large n , and $\sum_{n=1}^{\infty} b_n$ converges, then $\sum_{n=1}^{\infty} a_n$ converges. If $\sum_{n=1}^{\infty} a_n$ diverges, then $\sum_{n=1}^{\infty} b_n$ diverges.