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Integral Test

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

when $a_n = f(n) \geq 0$

and $f(n)$ is continuous, positive and decreasing

<u>Condition of Convergence:</u>

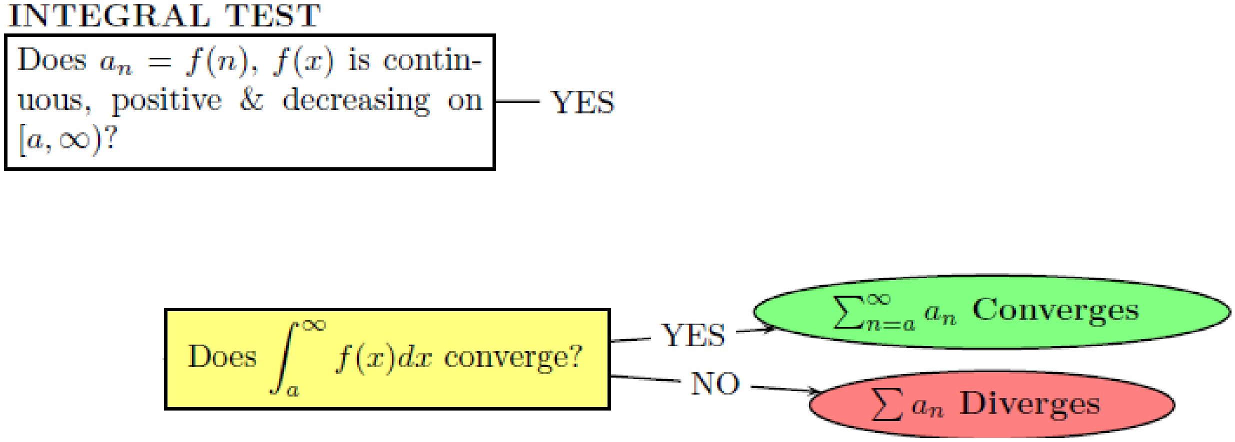
$\int_1^{\infty} f(x)dx$ converges

<u>Condition of Divergence:</u>

$\int_1^{\infty} f(x)dx$ diverges

* Remainder: $0 < R_N \leq \int_N^{\infty} f(x)dx$

INTEGRAL TEST



Integral Test: If $f(x)$ is a positive, continuous, and decreasing function on $[1,\infty)$ and let $a_n = f(n)$. Then the series $\sum_{n=1}^{\infty} a_n$ will converge if the improper integral $\int_1^{\infty} f(x)\,dx$ converges. If the improper integral $\int_1^{\infty} f(x)\,dx$ diverges, then the infinite series $\sum_{n=1}^{\infty} a_n$ diverges.