Name of Test	Tests for	Statement
n^{th}-term Test	Divergence	If $\lim_{n\to\infty} a_n \neq 0$, then $\sum_{n=1}^{\infty} a_n$ diverges.
Integral Test	Con & Div	If $a_n = f(n)$ for some continuous function f that is positive and decreasing, then $\sum_{n=1}^{\infty} a_n$ converges/diverges if $\int_1^{\infty} f(x)\,\mathrm{d}x$ converges/diverges.
p-Test	Con & Div	If $p \leq 1$ then $\sum_{n=1}^{\infty} \frac{1}{n^p}$ diverges. If $p > 1$ then $\sum_{n=1}^{\infty} \frac{1}{n^p}$ converges.
Geometric Series	Con & Div	The series $\sum_{n=1}^{\infty} ax^n$ diverges if $\lvert x\rvert \geq 1$ and converges to $\frac{a}{1-x}$ if $\lvert x\rvert < 1$. Note that no matter what x is, we have the n^{th} partial-sum $S_n = a\frac{1-x^n}{1-x}$.
(Direct) Comparison Test	Con & Div	Let $0 \leq a_n \leq b_n$ for all n. Then if $\sum_{n=1}^{\infty} b_n$ converges, $\sum_{n=1}^{\infty} a_n$ must converge as well. On the flipside, if $\sum_{n=1}^{\infty} a_n$ diverges then $\sum_{n=1}^{\infty} b_n$ diverges too.
Limit Comparison Test	Con & Div	If $a_n > 0$ and $b_n > 0$ and if $\lim_{n\to\infty} \frac{a_n}{b_n} = L > 0$, then $\sum_{n=1}^{\infty} a_n$ and $\sum_{n=1}^{\infty} b_n$ either both converge or both diverge.
Ratio Test	Con & Div	If $\lim_{n\to\infty} \frac{a_{n+1}}{a_n} < 1$, then $\sum_{n=1}^{\infty} a_n$ converges. Furthermore, if $\lim_{n\to\infty} \frac{a_{n+1}}{a_n} > 1$, then $\sum_{n=1}^{\infty} a_n$ diverges. If $\lim_{n\to\infty} \frac{a_{n+1}}{a_n} = 1$, then the test is *inconclusive*.
Alternating Series Test	Convergence	If $0 < a_{n+1} < a_n$ (decreasing) and $\lim_{n\to\infty} a_n = 0$, then $\sum_{n=1}^{\infty} (-1)^n a_n$ converges. Failing either of the first two criteria means the test is *inconclusive*.
Absolute Convergence	Convergence	If $\sum_{n=1}^{\infty} \lvert a_n\rvert$ converges, then $\sum_{n=1}^{\infty} a_n$ converges.