Incomplete Matrix for Convergence Tests for Series

Test	Series	Convergence or Divergence	Comments
n^{th} term test (or the zero test)	$\sum a_n$	Iff $\lim_{n\to\infty} a_n \neq 0$ then _____	Inconclusive if _____
Geometric series	$\sum_{n=0}^{\infty} ax^n \left(\text{or} \sum_{n=1}^{\infty} ax^{n-1} \right)$	Converges to _____ only if _____ Diverges if _____	Useful for comparison tests if the n^{th} term a_n of a series is similar to _____
p-series	$\sum_{n=1}^{\infty} \frac{1}{n^p}$	Converges if _____ Diverges if _____	Useful for comparison tests if the n^{th} term a_n of a series is similar to _____
Integral	$\sum_{n=c}^{\infty} a_n \quad (c \geq 0)$ $a_n = f(n)$ for all n	Converges if _____ Diverges if _____	We require that the function f satisfy the following:
Comparison	$\sum a_n$ and $\sum b_n$ with $0 \leq a_n \leq b_n$ for all n	If $\sum b_n$ converges then _____ If $\sum a_n$ diverges then _____	The comparison series $\sum b_n$ is often a geometric series or a p-series.
Ratio	$\sum a_n$ with $\lim_{n\to\infty} \frac{\lvert a_{n+1}\rvert}{\lvert a_n\rvert} = L$	$\sum a_n$ converges if _____ $\sum a_n$ diverges if _____	Inconclusive if _____. Useful if a_n involves:
Absolute Value $\sum \lvert a_n\rvert$	$\sum a_n$	if $\sum \lvert a_n\rvert$ converges then _____	Useful when:
Alternating series	$\sum_{n=1}^{\infty} (-1)^{n-1} a_n \quad (a_n > 0)$	Converges if $0 < a_{n+1} < a_n$ for all n and $\lim_{n\to\infty} a_n = 0$	Applicable only to: