Tests signature and methods	Test	Series	Conditions of Convergence	Conditions of Divergence
See if the Limit can be taken	nth-Term	$\sum_{n=1}^{\infty} a_n$		$\lim_{n \to \infty} a_n \neq 0$
See if the radius can be extracted from the series	Geometric Series	$\sum_{n=0}^{\infty} ar^n$	$\lvert r \rvert < 1$	$\lvert r \rvert \geq 1$
See if a partial fraction can be applied (b1-b2). *note STOP when this happens (~~b1-b2~~)	Telescoping Series	$\sum_{n=1}^{\infty} (b_n - b_{n+1})$	$\lim_{n \to \infty} b_n = L$	
"n" to the power of p must be alone in the denominator and there must be a number in the numerator.	p-Series	$\sum_{n=1}^{\infty} 1/n^p$	$P > 1$	$0 < p \leq 1$
$(-1)^n$, $\sin(\pi n/2)$, $\cos(\pi n)$ If the test fails, the nth term test will take over and the series will diverge.	Alternating Series	$\sum_{n=1}^{\infty} (-1)^{n-1} a_n$	$0 < a_{n+1} \leq a_n$ and $\lim_{n \to \infty} a_n = 0$	
See if the series can be integrated. Note: a_n must be 1. Decreasing 2. Positive 3. Continues as $n \to \infty$	Integral	$\sum_{n=1}^{\infty} a_n$	$\int_1^{\infty} f(x)\,dx$ converges	$\int_1^{\infty} f(x)\,dx$ diverges
Look for to see if a_n can be raised to the n^{th} power	Root	$\sum_{n=1}^{\infty} a_n$	$\lim_{n \to \infty} \sqrt[n]{\lvert a_n \rvert} < 1$	$\lim_{n \to \infty} \sqrt[n]{\lvert a_n \rvert} > 1$ or ∞
Factorial (!), a number raised to the n^{th} power example (2^n)	Ratio	$\sum_{n=1}^{\infty} a_n$	$\lim_{n \to \infty} \lvert a_{n+1}/a_n \rvert < 1$	$\lim_{n \to \infty} \lvert a_{n+1}/a_n \rvert > 1$ or ∞
a_n will be given, you should create a b_n " series greater than what was given & it must converge. If it does not, try to create a series that is less than a_n and it should diverge. *note* the bigger is bottom function the smaller is the function. Hint: P-series, and Geometric are your target	Direct Comparison	$\sum_{n=1}^{\infty} a_n$	$0 < a_n \leq b_n$ and $\sum_{n=1}^{\infty} b_n$ converges	$0 < b_n \leq a_n$ and $\sum_{n=1}^{\infty} b_n$ diverges
$b_n = 1/(n)$ (difference of the two highest powers of n) If b_n converges then a_n converges and if b_n diverges then a_n diverges	Limit Comparison	$\sum_{n=1}^{\infty} a_n$	$\lim_{n \to \infty} a_n/b_n = L > 0$ and $\sum_{n=1}^{\infty} b_n$ converges	$\lim_{n \to \infty} a_n/b_n = L > 0$ and $\sum_{n=1}^{\infty} b_n$ diverges

Note: Table for series taken from the Calculus by Larson book