

A Method for Testing

Absolute convergence / Conditional convergence / divergence

(1) check: Does the n^{th} term of the sum go to 0 as $n \rightarrow \infty$?

If not: the series diverges by the divergence test and you are done

(2) check: does $\sum |a_n|$ converge?

→ you have many tools to check this
→ Run down the "series convergence test" list

If yes: the series converges absolutely & ~~usually~~ normally and you are done

(3) If $a_n \rightarrow 0$ and $\sum |a_n|$ diverges, check if $\sum a_n$ converges.

Notice: ~~this~~ ~~usually~~ when this happens the series is often an alternating series.