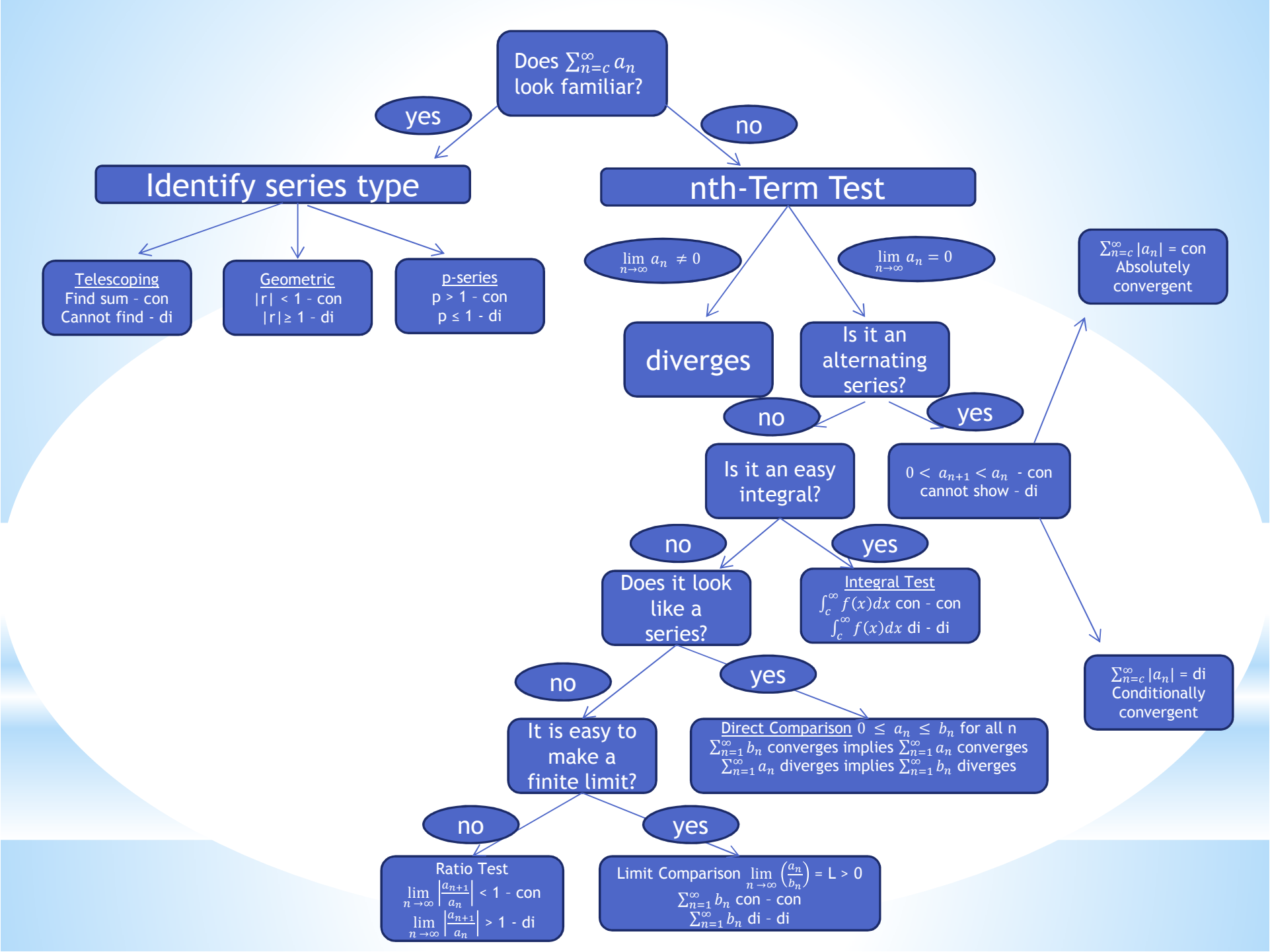
Does $\sum_{n=c}^{\infty} a_n$ look familiar?
yes
no
Identify series type
nth-Term Test
Telescoping
Find sum - con
Cannot find - di
Geometric
|r| < 1 - con
|r| ≥ 1 - di
p-series
p > 1 - con
p ≤ 1 - di
$\lim_{n\to\infty} a_n \neq 0$
$\lim_{n\to\infty} a_n = 0$
diverges
Is it an alternating series?
no
yes
$\sum_{n=c}^{\infty} |a_n|$ = con
Absolutely convergent
Is it an easy integral?
$0 < a_{n+1} < a_n$ - con
cannot show - di
no
yes
Does it look like a series?
Integral Test
$\int_c^{\infty} f(x)dx$ con - con
$\int_c^{\infty} f(x)dx$ di - di
$\sum_{n=c}^{\infty} |a_n|$ = di
Conditionally convergent
no
yes
It is easy to make a finite limit?
Direct Comparison $0 \leq a_n \leq b_n$ for all n
$\sum_{n=1}^{\infty} b_n$ converges implies $\sum_{n=1}^{\infty} a_n$ converges
$\sum_{n=1}^{\infty} a_n$ diverges implies $\sum_{n=1}^{\infty} b_n$ diverges
no
yes
Ratio Test
$\lim_{n\to\infty} \left|\frac{a_{n+1}}{a_n}\right| < 1$ - con
$\lim_{n\to\infty} \left|\frac{a_{n+1}}{a_n}\right| > 1$ - di
Limit Comparison $\lim_{n\to\infty} \left(\frac{a_n}{b_n}\right) = L > 0$
$\sum_{n=1}^{\infty} b_n$ con - con
$\sum_{n=1}^{\infty} b_n$ di - di