

Math 102 — Alternating series test

Summary. Try each of the following problems together in a small group.

Problem 1. For each of the following series, explain how the alternating series test can be applied to prove their convergence.

a. $\sum_{n=1}^{\infty} \frac{(-1)^n}{\sqrt{n}}$

b. $\sum_{n=1}^{\infty} \frac{(-1)^n}{\sqrt{n^2+6}}$

c. $\sum_{n=1}^{\infty} \frac{(-1)^n}{n!}$

d. $\sum_{n=1}^{\infty} \frac{(-1)^n}{3^n}$

e. $\sum_{n=1}^{\infty} \frac{(-1)^n}{n^5+3n^2}$

Problem 2. For each series in Problem 1, explain whether it is absolutely convergent or conditionally convergent.