

EXAMPLE

Here is an example for an infinite series which is ‘almost’ Leibniz but not quite, and the series does NOT converge. That is, it has the form $\sum (-1)^n b_n$, where $b_n > 0$ and $\lim b_n = 0$, but not in a monotone way:

Consider

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

Writing out in detail:

$$(-1/1) + (3/2) - (1/3) + (3/4) - (1/5) + (3/6) - (1/7) + (3/8) - \dots$$

This series is not convergent. Why?