Wisselreekstoets (Alternating Series Test) (Leibniz Toets)

If the alternating series

$$\sum_{n=1}^{\infty} (-1)^{n-1} b_n = b_1 - b_2 + b_3 - b_4 + b_5 - b_6 + \cdots$$

satisfies

- $0 \leq b_{n+1} \leq b_n$ for all n and
- $\lim_{n \to \infty} b_n = 0$,

then the series is convergent.

Homework

Ex. 11.5 nr. 1, 3, 5, 7, 13, 15, 17

Wisselreeks-skattingsstelling
(Alternating Series Estimation Theorem)

If $s = \sum_{n=1}^{\infty} (-1)^{n-1} b_n$ is the sum of an alternating series satisfying

- $0 \leq b_{n+1} \leq b_n$ for all n and
- $\lim_{n \to \infty} b_n = 0$,

then

$$|R_n| = |s - s_n| \leq b_{n+1}.$$

Homework
Ex. 11.5 nr. 23