Die Vergelykingstoets / The Comparison Test

Suppose that $\sum_{n=1}^{\infty} a_n$ and $\sum_{n=1}^{\infty} b_n$ are series with positive terms.

1. If $\sum_{n=1}^{\infty} b_n$ converges and $a_n \leq b_n$ for all $n \in \mathbb{N}$, then $\sum_{n=1}^{\infty} a_n$ converges.

2. If $\sum_{n=1}^{\infty} b_n$ diverges and $a_n \geq b_n$ for all $n \in \mathbb{N}$, then $\sum_{n=1}^{\infty} a_n$ diverges.

Homework

Ex. 11.4 nr. 1, 5, 7, 9, 13, 15, 29, 39

Die Limietvergelykingstoets / The Limit Comparison Test

Suppose that $\sum_{n=1}^{\infty} a_n$ and $\sum_{n=1}^{\infty} b_n$ are series with positive terms:

1. If $\lim_{n\to\infty} \frac{a_n}{b_n} = 0$ and $\sum_{n=1}^{\infty} b_n$ is convergent, then $\sum_{n=1}^{\infty} a_n$ is convergent.

2. If $\lim_{n\to\infty} \frac{a_n}{b_n} = c > 0$, then $\sum_{n=1}^{\infty} b_n$ is convergent if and only if $\sum_{n=1}^{\infty} a_n$ is convergent.

3. If $\lim_{n\to\infty} \frac{a_n}{b_n} = \infty$ and $\sum_{n=1}^{\infty} b_n$ is divergent, then $\sum_{n=1}^{\infty} a_n$ is divergent.

Homework

Ex. 11.4 nr. 17, 19, 21, 25, 27, 31, 41(b)

Leave out "Estimating Sums".