المحاضرة الخامسة

The P-Series

A p-Series is a series of the form

$$\sum_{n=1}^{\infty} \frac{1}{n^p} = \frac{1}{1^p} + \frac{1}{2^p} + \frac{1}{3^p} + \cdots$$

This series converges if $p > 1$ and diverges if $p \leq 1$.

Examples

The series $\sum_{n=1}^{\infty} \frac{1}{\sqrt{n}}$ diverges because $p = 1/2 \leq 1$.

The series $\sum_{n=1}^{\infty} \frac{1}{n^{3/2}}$ converges because $p = \frac{3}{2} > 1$.
