

CH 3 — Series

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Info — Infinite Series

An infinite series is an expression of the form

$$\sum_{n=1}^{\infty} a_n = a_1 + a_2 + \dots$$

where $\{a_n\}$ is a sequence.

- the sequence of terms $\{a_n\}_{n=1}^{\infty}$
- the sequence of partial sums $\{S_m\}_{m=1}^{\infty}$ where S_m is the truncated sum up to the term a_m :

$$S_m = a_1 + a_2 + a_3 + \dots + a_m$$

We say that a series converges if the sequence of partial sums converges.

If $\lim_{m \rightarrow \infty} S_m = S$, then S is called the sum of the series.

Otherwise the series diverges.

Note that oscillating result is assigned with “no limit” or DNE rather

Geometric Series

Harmonic Series

Telescoping Series

Alternating Series