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sum of series

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Related topic	ManipulatingConvergentSeries
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Related topic	RealPartSeriesAndImaginaryPartSeries
Related topic	LimitOfSequenceAsSumOfSeries
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Defines	partial sum

If a series $\sum_{n=1}^{\infty} a_n$ of real or complex numbers is convergent and the limit of its partial sums is S , then S is said to be the *sum of the series*. This circumstance may be denoted by

$$\sum_{n=1}^{\infty} a_n = S$$

or equivalently

$$a_1 + a_2 + a_3 + \dots = S.$$

The sum of series has the distributive property

$$c(a_1 + a_2 + a_3 + \dots) = ca_1 + ca_2 + ca_3 + \dots$$

with respect to multiplication. Nevertheless, one must not think that the sum series means an addition of infinitely many numbers — it's only a question of the limit

$$\lim_{n \rightarrow \infty} \underbrace{(a_1 + a_2 + \dots + a_n)}_{\text{partial sum}}.$$

See also the entry “manipulating convergent series”!

The sum of the series is equal to the sum of a partial sum and the corresponding remainder term.