

Why

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## **Problem**

Consider the sequence  $(a_n)_{n \in \mathbb{N}}$  defined by

$$a_n = \frac{1}{n^2}.$$

Does  $\lim_{N\to\infty}\sum_{n=1}^N a_n$  exist? If so, what is the limit? These questions are known as the *Basel problem*.

## Solution

Proposition 1.

$$\lim_{N \to \infty} \sum_{n=1}^{N} s_n = \frac{\pi^2}{6}.$$

 $<sup>^1\</sup>mathrm{Future}$  editions will include. Future editions may also rename this sheet.

