

$$\zeta(s) = 1 + 1/2^s + 1/3^s + 1/4^s + \dots$$

To be able to add these infinitely many terms and get a finite answer, we need the variable s to be larger than 1. But there is another way of defining the zeta function which works for all complex numbers s .

A beautiful formula discovered by the famous Swiss mathematician Leonhard Euler (1707-1783) tells us the value of the zeta function when $s=2$:

$$\zeta(2) = 1 + 1/4 + 1/9 + 1/16 + 1/25 + \dots = \pi^2/6.$$

The appearance of the number π in this formula is truly unexpected, don't you agree?