Re: Cardnality of integers > Cardnality of integers

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- *From*: Tim Little <tim@xxxxxxxxxxxxxxxxxxxxxxxxxxx>
- *Date*: Thu, 20 Mar 2008 23:47:37 −0000

On 2008−03−20, S_Paske@xxxxxxxxxxx <S_Paske@xxxxxxxxxxx> wrote:

> Now, suppose Cantor tried to convince me that:
> RN * 2^k1 * 3k^2 * 5k^3... is not on this plane with a diagonal
> argument involving a sequence of steps:

The definition of the diagonal does not involve a "sequence of steps", any more than defining f:N−>N by f(n) = n^2 involves an infinite sequence of steps.

A sequence is simply a function with natural numbers as the domain. The entries in your list are sequences that can be mapped to rationals. Diagonalization gives you a sequence, but you would then need to prove that it corresponds to a rational.

Induction will not suffice. It only proves properties of every *finite* subsequence.

> Thus the rationals have a 'distribution since they can be mapped to
> the plane.

The rationals have uncountably many distributions. None of them are uniform.

Yes, you can consider the limit of probabilities over some sequence of finite uniform distributions. It would be a grave mistake to assume that the limit is a probability in some distribution itself, though. If you choose a different sequence of finite uniform distributions, you can get a different limit.

− Tim
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