Re: irrational number continuum

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On Jun 23, 6:58 am, slartibartfast <tomokane2...@xxxxxxxx> wrote:

> I'm not objecting to the number 1/3; but
> firstly to the possibility to represent it as a finite decimal AND
> ALSO secondly to the notion of a completed infinity (of 3's after the
> decimal point).

If you disallow denumerable sequences, then fine, you're welcome to adopt whatever alternative axioms or set of priniciples you like that do not prove the existence of denumerable sequences.

> the fact that the differs less and less from 1/3 the more digits we
> use is NOT (in combination with the observation that the number 1/3
> actually exists) any justification whatsoever for concluding that
> "therefore a completed infinity must be notionally possible even if
> not actually representable"

We don't argue by any such justification.

> That is like arguing that little pixies built the eiffel tower, then
> pointing to the existence of the eiffel tower as evidence for the
> existence of little pixies!

But that is not an analogy with what we do.

> we don't accept the existence of the square root of −1,

Sure we do.

> yet we use it
> usefully.

> we don't have to accept the actual existence of such a number as the square root od 2 in order to do useful calculations with that "notion" either. I've never once had to write it out in full!

Then you're welcome to devise a mathematical notion of "actual existence" and prove what you think "actually exists".

> > We'd be a lot better off to say "2 doesn't have a decimal expansion that can be expressed in a finitenumberof digits" because that's a lot simpler than trying to exclude certain numbers.
>
> that already presupposes that there even ARE "such (exact) numbers" even though they "cannot be represented".

No, we prove it.

> here we come to it.
> if something "doesn't have a decimal expansion that can be expressed in a finite number of digits" (either in the case of dec. rep. of 1/3 or worse the square root of 2)
>
> there is no justification for assuming that there is ANY definite entity that that (partial) decimal representation partially represents.

We don't assume. We prove.

> in the case of 1/3, 1/3 definitely does exist and the quibble is only with the use of an "infinity" of 3's to "represent" it in the decimal system. (since all of its digits are known)

See my earlier remark.

> in the case of the square root of 2 however, we don"t even know what those digits would be, and there still "an infinity" of them.

We can't finitely list all the digits. That's not a contradiction.

> in all computations however, we only EVER use "approximations" to them, and these "approxmations" are always rational.

No, I don't always compute with only approximations. In computing the diagonal of a unit square, I arrive at the square root of 2, not at any approximation.

> why do we assume a continuum between 0 and 1?

> Because it's simpler if we do.

> no it isn't; its completely unnessary! just because space seems a continuum, doesn't mean number need be.

And that wasn't the argument for simplicity.

> since when we finish manipulating the symbols for such "irrational numbers" and progress to actually doing the computations with values, we only ever use "rational number" approximations" ever.

Nope. I just gave you an example. My calclulation of the diagonal of a unit square is the square root of 2, and not some approximation.

MoeBlee

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