

Re: Cantor's diagonal proof wrong?

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From: W. Mueckenheim (mueckenh_at_rz.fh-augsburg.de)

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"Shmuel (Seymour J.) Metz" <spamtrap@library.lspace.org.invalid> wrote in message news:<41aa5d5a\$14\$fuzhry+tra\$mr2ice@news.patriot.net>...

> In <fb701d3c.0411271334.cca9c93@posting.google.com>, on 11/27/2004

> at 01:34 PM, mueckenh@rz.fh-augsburg.de (W. Mueckenheim) said:

>

> >What does distinguish the "limit" from the diagonal?

>

> What distinguishes a banana from a townhouse? They're not remotely similar.

>

> The diagonal is a sequence of digits, not a number. In the case of the Cantor diagonal argument you're referring to, you take the sequence of digits as coefficients in a series and it is trivial to prove that the series converges.

Ok, the abbreviation "diagonal" should expand to "diagonal number".

>

> >Do we need different words here?

>

> We need words that are applicable, and we need to ensure that we have a common understanding of what they refer to. In particular, the term limit has a precise meaning.

>

> >However, how, then, can Cantor change all the digits of this

> >"limit"?

>

> He doesn't "change" anything. He defines a new number in terms of a sequence of representations of numbers.

He defines it by changing the digits a_{nn} of the diagonal number D to a'_{nn} of the new number D' , because he must make sure that in any case $a'_{nn} \neq a_{nn}$.

> >And why can't we consider my proof in the limit?

>

> What proof?

sci.math: Re: Cantor's diagonal proof wrong?

I have defined a Cantor-list, which always contains the diagonal number D_n constructed up to line n in line $Z(n+1)$ by construction. I found this very same list also appearing in this thread:

0.000...
0.100...
0.11000...
0.111000...
...

Changing the diagonal elements $0 \rightarrow 1$, we have $D_n = Z(n+1)$.

We see that either of the two statements:

A) Cantors changed diagonal number differs from every real in a line
not A) Cantors diagonal number does not differ from every real in a line

can be taken for granted. There is no logical priority in favour of A or not A, as long as all lines are enumerated by natural, hence finite numbers.

Regards, WM