# Re: Ultimate debunking of Cantor's Theory

***Source:*** http://sci.tech−archive.net/Archive/sci.math/2007−07/msg01993.html

- *From*: "Peter Webb" <webbfamily@xxxxxxxxxxxxxxxxxxxxxxxxx>
- *Date*: Sat, 14 Jul 2007 02:08:34 +1000

"Calvin" <crice5@xxxxxxxxxxxxxx> wrote in message
news:1184340486.718968.306970@xxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

> On Jul 13, 11:20 am, Calvin <cri...@xxxxxxxxxxxxxx> wrote:
>
> > ... again I
> > clearly understand that 0.0111... is the same as
> > 0.111...
>
> Another unfortunate typo.
>
> 0.0111... is the same as 0.1

As you have been very polite, and spent some time on this, I will give it another go.

When you do the Cantor trick in base 10, you can prove to yourself that it always produces a number not on the list. Even if you have 0.500.. somewhere on the list, you can be certain that you will never get the same number in a different form, such as 0.49999.. as a result of the construction.

If you could find a single example where the Cantor construction failed to produce a different number − if for example it generated 0.4999.. when 0.5 was on the list − then you can no longer claim that the Cantor construction ALWAYS produces a new number. You need this for it to be a number not on the list already. Now you can see for yourself that this isn't a problem in the standard base 10 construction.

It is, however, a problem in base 2. The examples posted are of lists where the number that is constructed is in fact already on the list in a different form. WE only need one example of a list where flipping the bits doesn't produce a number not already on the list to "break" the central premise of the construction, which is that the constructed number is NEVER on the list. Sometimes, obviously, in base 2 it is already on the list.

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