Re: induction vs Cantor

Source: http://sci.tech−archive.net/Archive/sci.math/2004−12/1983.html

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From: Chairman of the David Hilbert Appreciation Society (*mathgeekxxiiii_at_hotmail.com*)
Date: 11/26/04

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Date: Fri, 26 Nov 2004 16:01:47 −0500
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Poker Joker wrote:
> "Chairman of the David Hilbert Appreciation Society"
> <mathgeekxxiiii@hotmail.com> wrote in message
> news:8JqdnQxnYLcA6zrcRVn−3w@giganews.com...
>
>>Poker Joker wrote:
>>
>>>Let L_1 be a list of reals that implies a mapping F_1
>>>between the naturals and reals.
>>
>>Ok
>>
>>
>>>Let D_n be a Cantor anti−diagonal number that can be
>>>formed using the mapping F_n
>>
>>Ok
>>
>>
>>>Let L_n+1 be a list of reals by inserting D_n into L_n
>>>at row 2n and shifting down all the previous rows at 2n
>>>and above. This process is clearly an inductive process
>>>that creates a new mapping for each natural number.
>>>(L_n+1 could also be formed by prepending D_n to
>>>L_n.)
>>
>>Right. You outline a process to create infinitely many L_n,
>>none of which contains all of the reals.
>>
>>
>>>All of the D_n can be found in "infinitely many" mappings
>>>between the naturals and the reals.
>>
>>This part is a bit fuzzy. At this stage you don't have a proof
>>that any one L_n contains all of the reals; which is what you
>>would need to declare that Cantor made an error. That you are
>>hand−waving about something included in "infinitely many" mappings
>>is irrelevant since in no obvious way does such a thing relate

>>to a list, or a bijection.
>
>
> This part is not fuzzy. For all j > n, D_n is in L_j.

It's less fuzzy now.

> The union of all the L_n, (a countable set) contains all the D_n.

I agree that the union of all L_n is a countable set.

I also agree that the union of all L_n "contains all the D_n"

However, I don't agree that R \ L_0 = "all the D_n".

Have you followed through with your process a little
bit with a particular L_0? All of the D_n's have the
property that, if k > n, then the first (n/2)−1 digits
of D_n match the first (n/2)−1 digits of D_k.

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`Replace Roman numerals with digits to reply by email`