Re: Cantor Confusion

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- *From*: David Marcus <DavidMarcus@xxxxxxxxxxxxxx>
- *Date*: Fri, 3 Nov 2006 15:36:59 −0500

MoeBlee wrote:

> mueckenh@xxxxxxxxxxxxxxxxx wrote:
>
> > MoeBlee schrieb:
> >
> > > For reference, here is my proof:
> > >
> > > A sequence is a function such that the domain of the function
> > > is an
> > > ordinal. A finite sequence has a natural number as its
> > > domain. A
> > > denumerable (countably infinite) sequence has omega as its
> > > domain. An
> > > uncountable sequence has an uncountable ordinal as its
> > > domain.
> > >
> > > The entries in a sequence are members of the range of the
> > > sequence.
> > > Each entry is indexed by a member of the domain. The
> > > elements of the
> > > sequence are ordered pairs of the form <x y> where x is a
> > > member of the
> > >
> > > domain (which is an ordinal) and y is a member of the range
> > > of the
> > > sequence (so the y's are the entries).
> > >
> > > dom(S) = the domain of S.
> > >
> > > length(S) = dom(S).
> > >
> > > In my example S is the denumerable sequence recursively
> > > defined as
> > > follows:
> > >
> > > S(0) = {<0 0>}

> > > S(n+1) = the unique finite sequence f such that length(f) =
> > > length(S(n))+1 and such that f(0)= S(n)(max(dom(S(n)))) + 1
> > >
> > > So S is a denumerable sequence such that each entry of S is a
> > > finite
> > > sequence.
> > >
> > > The diagonal of S = the unique denumerable sequence D
> > > such that, for
> > > all n in omega, D(n) = S(n)(n).
> > >
> > > The diagonal of S is a denumerable sequence.
> > >
> > > Therefore, there exists a denumerable sequence S of finite
> > > sequences
> > > such that the diagonal of S is denumerable.
>
> > Now map it on a line. It is longer than any line entry.
>
> The real line?

Obviously, I could be wrong, but I think WM means map it on a line of the list. He seems to think that because we construct the diagonal from the list, the diagonal must be one of the lines in the list. Why he thinks this, I have no clue.

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David Marcus
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