

Re: Cantor's circular "proof" that evens = integers

Source: <http://sci.tech-archive.net/Archive/sci.logic/2007-05/msg00161.html>

- *From:* george <greeneg@xxxxxxxxxxx>
 - *Date:* 7 May 2007 12:26:21 -0700
-

On May 6, 5:04 am, Phil <toob-head...@xxxxxxxxxxxxxxxx> wrote:

Well, I am pointing out that that is true ONLY when that infinite set is combined with the proper axioms.

It is NOT POSSIBLE for it NOT to be so combined.
"that infinite set" DOES NOT HAVE *ANY* EXISTENCE
apart from these axioms! THAT infinite set was PRODUCED BY
the axiom of infinity!

And in my response to
Jesse I gave an example of an infinite set, and a valid method of using
or viewing that infinite set, in which $n+1$ is NOT in the infinite set!

That simply doesn't mean shit.
In the infinite set $0, 2, 4, 6, 8, \dots$, i.e. "E", the set of all even
naturals, when $n=0$, $n+1$ (which is 1) is not in the set.
That is trivial. That is easy. Obviously nobody ever said
that ALL infinite sets had to be closed under successor.
But they DO all have to be equipollent to one that is (unless
they are an even HIGHER order of infinity).

Come on, Moe, do you ACTUALLY BELIEVE
that when mathematicians marvel at
the fact that N and E are equinumerous, that they attribute this "fact,"
NOT to the fact that N is an infinite set, but rather to the AXIOMS that
are used with natural numbers, real numbers, etc?

That is a false dichotomy. The axioms were designed
to capture what was known about the sets to begin with.
Axioms that did NOT cause this to turn out to be the case
would be axioms that were simply NOT ABOUT sets of
natural numbers!

Re: Cantor's circular "proof" that evens = integers

An infinite set is DEFINED as a set that is equinumerous with a proper subset of itself!

Yes, in ZFC, that is the definition.

Where are the footnotes that say that this is actually due to coexisting axioms, and that there may be another branch of mathematics in which N and E are NOT equinumerous?

Nowhere, really. There are other axiomatizations of N, but IN ALL OF THEM, N and E are equinumerous. You are welcome to try to make it otherwise, but you have to make sure that your axioms DON'T wind up leaving us talking about objects that ARE NOT natural numbers! In particular, you don't get to have any infinite natural numbers. Natural numbers are finite BY DEFINITION.

.