Re: infinity

Source: http://sci.tech−archive.net/Archive/sci.math/2005−10/msg01699.html

- *From*: "David R Tribble" <david@xxxxxxxxxxx>
- *Date*: 15 Oct 2005 15:57:32 −0700

Tony Orlow wrote:
>> Try "number of elements". Stick to basics. Remember Occam's Razor.
>

David R Tribble said:
>> You agree that the set of naturals N is infinite.
>> What do _you_ call the measure of set N? What size is it?
>

Tony Orlow wrote:
> Since it is infinite, the size must be putin infinite terms. This set is the
> natural unit infinity, since it is based on the identity function between
> element value and position. Its size is N, which means one element per unit,
> forever.
>

We call it Aleph_0.

>> The set of even integers is infinite.
>> What size is it?
>
> 2N

Huh. I would have thought it was N/2+N/2 = N.

We call it Aleph_0. Oh well, slight difference there.

>> The real points in [0,1] is an infinite set.
>> What size is it?
>
> The correlation between the continuum and discrete infinities is a difficult
> one which may never be solved. A mapping of logN(x) maps the naturals to the
> reals in [0,1], though not with constant density. It is however fully dense at
> its least dense point, and can be considered an enumeration of the reals in
> [0,1]. Given that function and the inverse function rule, there would appear
> to be N elements in the set, which makes sense since we mapped the N naturals
> each to one real in [0,1]. However, because of the increasing density in this

> mapping, over the entire range N, it would appear to have N^N elements, so
> there is a problem here. It is probably unavoidable to have two unit
> infinities, as I said a long while back, the discrete unit infinity N, and
> some continuous unit infinity R, which would be the number of reals in [0,1].

>> The set of all reals, R, is infinite.
>> What size is it?
>
> The unit discrete infinity times the unit continuous infinity. N units of R
> points apiece.

We call it c.

>> The power set of N contains all the possible subsets of N.
>> What size is it?
>
> 2^N

We call it 2^Aleph_0.

>> The power set of R contains all the possible subsets of R.
>> What size is it?
>
> 2^(NR)

We call it 2^c.

>> The rest of the world has names for all these set sizes (which
>> we call "cardinalities"). Do you?
>
> Avoid the nominative fallacy at all costs.

At first glance, it looks like your N is very much like our Aleph_0,
and your R (or NR) is very much like our c. Are you sure you're
not coming around to our points of view?

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  - ***Re: infinity***
    - *From:* Tony Orlow
- ***References***:
  - ***Re: infinity***
    - *From:* Jonathan Hoyle

- ♦ ***Re: infinity***
  - ◊ *From:* Tony Orlow
- ♦ ***Re: infinity***
  - ◊ *From:* Jonathan Hoyle
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  - ◊ *From:* Daryl McCullough
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