Re: Question

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- *From*: "zuhair" <zaljohar@xxxxxxxxx>
- *Date*: 27 Apr 2006 12:12:57 −0700

Arturo Magidin wrote:

> In article <1146163021.981085.118390@xxxxxxxxxxxxxxxxxxxxxxxxxxx>,
> zuhair <zaljohar@xxxxxxxxx> wrote:
>
>> Arturo Magidin wrote:
>
> Look at the DEFINITION:
>
> A sequence of rationals is
> function from the natural
> numbers to the
> rationals.
>
> We say a sequence (a_0,
> a_1,...) (usually denoted
> {a_i}) converges to
> the rational number Q if and
> only for every N>0 there
> exists M>0 such
> that if n>M, then
> |a_n−Q|<1/N.
>
>> still there is a problem, when you say converges to zero,
>
> No, there is no problem when I say that. I am going EXACTLY by the
> definition.
>
> You may, perhaps, object to the definition, but then you are objecting
> to all of mathematics.

> at what
> number of terms in that series this will happen,

This question is nonsense. I did NOT say that the sequence is "eventually equal to zero". That is something else. I said the sequence CONVERGES to zero. That is something else, and was EXPLICITLY and CLEARLY defined for you above.

> is it at Omega of c_i
> or Omega+1 or 2^Omega.

None of them. There is no omega here. Sequences are indexed by NATURAL numbers. Natural numbers are, BY DEFINITION, finite. Omega is NOT a natural number. "The sequence converges to zero" is NOT equivalent to "the sequence is eventually equal to zero".

> Your Cauchy priniciple didn't mention that.

Yes, it did. It gave ALL the definitions. You just seem unable to parse them.

A sequence of rationals was defined to be a function from the NATURALS to the rationals. We write it as (a_0, a_1, a_2, ..., a_n, ...), where "a_n" is the value of the function at the natural number n. The only terms that are defined are the terms indexed by NATURAL numbers, which are FINITE. There is no "omega", there is no "omega + 1", there is no "2^omega". There are only finite numbers.

The definition of "cauchy sequence" and "convergence" relates ONLY to sequences; thus, it relates ONLY to finite indices. The definition of convergence and of cauchy sequence is given entirely in terms of FINITE indices and conditions on them.

Period.

> It doesn't differentiate
> between
> 0.9999........
> which contains Omega of nines in it after the decimal point.

> > and 0.9999....... 9 which contains Omega+1 of nines in it after the decimal point.
>
> That expression does NOT represent a sequence, so it is not under consideration. It is merely a symbolic string of symbols which does not represent a real number.
>
> > In reality I tend to think that it is at what Cantor called once as "The Absolute Infinity" number of terms in those series that c_i will be zero
>
> In reality I tend to think that you are not bothering to think. Certainly, you seem either unwilling or incapable of reading simple mathematical definitions.
>
> --
> ==
> "It's not denial. I'm just very selective about
> what I accept as reality."
> --- Calvin ("Calvin and Hobbes")
> ==
>
> Arturo Magidin
> magidin@xxxxxxxxxxxxxxxxx

I know that converges into zero is something else other than equal zero.

The definition states that if the difference converges into zero then the two Cauchy sequences are equivalent, I disagree with that.

They should be equivalent only when the difference REACHES zero.

and it should specify at which number of terms that would happen.

It is obvious that for any finite number of terms n , c_n is $1/10^n > 0$

But if the number of terms in the sequence is infinite then there might be a possibility of c_i equalling zero, but that would be imaginable at absolute infinity only.

I agree with you in that you are working according to the definition. But the definition itself is not convincing.

So I am questioning the definition itself.

Now I want you to answer that question please.

Define: 0.9999......... as 9/10 + 9/10^2 + 9/10^3 + ... +
9/10^Omega

(0.9999....... is defined to contain Omega of nines after the decimal
point)

would that number be eqivalent to 1.0000........

My point is that you now that for example the number 0.9999.......nth9
were n is finite , is never eqivalent to 1 , it is always lower than
one by 1/10^n.

Now for the number above which has Omega of nines in it after its
decimal point, would that number
be equivalent to 1. or you think that the difference 1/10^Omega is
larger than zero.

That was my question, can you answer it.

And suppose there is another number 0.9999....... 2^Omega th 9 , ie a
number which contains
2^Omega of nines after the decimal point.

Is that number different from the first number with Omega repeations of
9. or is the same

Is it eqivalent to number 1.0000........ or is lower than it.

Best,

Zuhair

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