Re: abundance of irrationals!)

Source: http://sci.tech−archive.net/Archive/sci.math/2005−05/msg01361.html

---

- *From*: Virgil <ITSnetNOTcom#virgil@xxxxxxxxxxx>
- *Date*: Sat, 07 May 2005 22:12:25 −0600

In article <IG5D0K.9A8@xxxxxx>, "Dik T. Winter" <Dik.Winter@xxxxxx>
wrote:

> In article <MPG.1ce57c9143cb687989bdd@xxxxxxxxxxxxxxxxxxxxxxxxx> Tony Orlow
> (aeo6) <aeo6@xxxxxxxxxxx> writes:
> > Dik T. Winter said:
> > > In article <MPG.1ce41773427854f7989bc0@xxxxxxxxxxxxxxxxxxxxxxxxx> Tony
> > > Orlow (aeo6) <aeo6@xxxxxxxxxxx> writes:
> > > ...
> > > > I don't tend to deal with these axioms much. The only reason I am
> > > > dealing
> > > > with them now is that mathematicians seem not to be able to do
> > > > without
> > > > them.
> > >
> > > Well, you know, without axioms, no mathematics... You have to start
> > > with
> > > some basic truths, otherwise you can not logically reason to
> > > conclusions.
> > > The basic truths are the axioms.
> >
> > Axioms are not "basic truths". The axioms are assertions which, within the
> > logic of the axiomatic system are atomic statements assumed to be true,
> > and
> > treated in that system as "basic truths".
>
> Yup, within an axiom system the axioms are basic truths.
>
> > eated in that system as "basic truths". HOWEVER, the "basic truths" are
> > NOT
> > the axioms. The axioms are statements that we agree are true, based on
> > reasons OUTSIDE of the particular axiomatic system.
>
> Not so. There are no reasons OUTSIDE an axiomatic system for either of the
> three possible variants of the parallel axiom.

There can be reasons outside any system for being interested, or not
interested, in that particular system. Such reasons are not a part of
the system. many such systemms are of interest because they seem to

model aspects of reality which we deem important.

For example, when the system of group axioms was first developed, there
were a lot of outside reasons for being interested in it, because the
group structure seemed to appear in a lot of different situations.
>
> > This is true when dealing with logic in general. We start with a certain
> > set of given "facts", each with a certain truth value (generally 1, or
> > 100% true), and a logical statement using those atomic facts, and evaluate
> > the truth value of the logical statement, by plugging in truth values and
> > evaluating the logical construction. Now, if all our facts are true, and
> > all our logical operations are correctly performed, we will get an correct
> > answer. IF, however, any of our assertions is FALSE, then no matter how
> > well we perform our oeprations on the truth values of those "facts", we
> > are going to get an erroneous result.
>
> How do you measure whether an axiom is false or not? What does it *mean*
> that an axiom is false?
>
> > Axiomatic mathematics IS logical inference. ASSUMING all the axioms we
> > have
> > asserted are CORRECT, then we can prove a given logical statement
> > involving
> > them. If we get results that make no sense, then we can examine our logic
> > to
> > see if we made a mistake.
>
> What does it mean that a result makes no sense? If a result is not in
> conflict
> with the axioms used, it makes sense, in that axiomatic system. I have no
> idea what is the case outside the axiomatic system.
>
> ...
> > The truth of axioms can be tested, as I said before, by their
> > compatibility
> > with all other axioms and their compatibility with reality.
>
> What does that mean? How do you check compatibility with reality?
> Mathematics is not about reality, it is about ideas.
>
> > > > Well f(0) is undefined, why? Because sin(1/0), or sin(oo), is
> > > > undefined. But, we know that sin is always between 1 and −1 and
> > > > so x sin(1/x) at x=0 is equivalent to 0*(some number between 1
> > > > and −1), which is always 0.
> > >
> > > Except when you go to the complex numbers, where sin(x) can be any
> > > value,
> > > including values larger than 0... But what you are telling above seems
> > > a
> > > lot like taking a limit...
> >

> > It's not dissimilar, but doesn't require the full extent of limits.
>
> You are applying one of the common tests for whether a limit exists.
> And indeed, majoring x.sin(x) by x is one of such tests. But it is
> a theorem that that test indeed gives the limit. Moreover, you have
> a (mathematically) wrong statement: you state that at x = 0 x.sin(1/x)
> is equivalent to 0*(some number between 1 and −1). That is false; as
> you properly write just a little higher, sin(1/0) is undefined. So
> how can you conclude that it is a number between 1 and −1?
>
> > I was playing cards with a buddy, five card draw.
>
> Completely irrelevant.
>
> > > > > To me there is no confusion: f is not defined at x=0. On the
> > > > > other
> > > > > hand the limit of f, as x tends to zero, is indeed L = 0
> > > > > because
> > > > > for every _nonzero_ x, |f(x)| <= |x|, which means that the values
> > > > > of f can be kept smaller than any pre−assigned epsilon simply by
> > > > > keeping x close to (but of course different from) epsilon.
> > >
> > Somehow, the above looks indented like my statement, but I don't think it
> > is.
>
> It is not. If you look closely you will see it is not indented as your
> statement. Count the number of > signs.
.

- ***References***:
  - ***Re: abundance of irrationals!)***
    - *From:* aeo6
  - ***Re: abundance of irrationals!)***
    - *From:* Dik T. Winter
  - ***Re: abundance of irrationals!)***
    - *From:* aeo6
  - ***Re: abundance of irrationals!)***
    - *From:* Dik T. Winter

- Prev by Date: ***Probability Question***
- Next by Date: ***Re: Probability Question***
- Previous by thread: ***Re: abundance of irrationals!)***
- Next by thread: ***Re: abundance of irrationals!)***
- Index(es):
  - ***Date***
  - ***Thread***