Re: Logarithm of transfinite numbers

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- *From*: Matt Gutting <tchrmatt@xxxxxxxxx>
- *Date*: Thu, 23 Mar 2006 14:33:09 −0500

Tony Orlow wrote:

> Virgil said:
>
> > In article
> > <MPG.1e8b8971d2df98a698ab6e@xxxxxxxxxxxxxxxxxxxxxxxxx>,
> > Tony Orlow <aeo6@xxxxxxxxxxx> wrote:
> >
> > > Virgil said:
> > >
> > > > In article
> > > > <MPG.1e8b557d7e89a7b898ab62@xxxxxxxxxxxxxxxxxxxxxxxxx>,
> > > > Tony Orlow <aeo6@xxxxxxxxxxx> wrote:
> > > > If each "increment" has an infinite number
> > > > of others following it, as is the case, it does
> > > > no matter how many or how few it has
> > > > preceding it.
> > >
> > > If no finite is infinitely greater in units than any other finite,
> > > then how can there be an infinite number of unit increments
> > > and successions after any of them, when there is nothing
> > > infinitely after it in the set?
> >
> > One first gets the set of naturals via the inductive axiom, one then shows that
> > the set produced by that axiom satisfies our mathematical definition of an
> > infinite set. That's how!
>
> First of all, the inductive axiom doesn't define the inductive set. The first four axioms do that, and the inductive axiom provides a method for proving over such a set that a property is true of all elements of the set. Secondly, those axioms don't guarantee an infinite set, as they equally apply to a small ring such that S(n)=(n+1) mod x for x in N. If it doesn't account for such a situation, then why shoudl you think it always produces an infinite set, especially a sparse one like the anturals where the elements are limited to finite values?

As I stated previously, the axioms don't apply to a "circular" set such as
you describe, because they violate either the axiom that 0 is not the successor

of any number, or the axiom that different numbers have different successors
(which axiom is violated depends on the way one creates the "circularity").

> > The set of naturals is characterized by the equality between
> > element count and value within the set.
>
> The set of naturals is *characterized* by the Peano axioms, and in no other
> way. Anything other than the properies stated in those axioms is derived, not
> intrinsic.

> Then the set of all x mod 3 is infinite?

See above; this set is not characterized by the Peano axioms.

> If TO has something other than that in mind, it is NOT the set of naturals.

> There is only one set of naturals, and the porper definition is what is at issue here. Von
> Neumann don't cut it.

I haven't seen a proof of that; I've only seen you offer reasons why you believe
it doesn't make sense.

> > Every set of naturals having a lagest element
> > is Dedeking finite.
> > Every set of naturals, except the empty set,
> > NOT having a largest element is provably
> > Dedekind infinite.
>
> Even if it doesn't contain an infinite quantity of elements,
> yes.

> So TO here claims infinite sets are not infinite? Not very bright, is he?

> I am continuing to maintain that there is a difference between unboundedness and
> infiniteness, based on the quantitative interpretation of what infinity means.

I still don't really understand this, especially since (from what little I think I *do* understand) it seems to have something to do with order. In other words, if a set is bounded, one can find a number greater than − i.e. coming later in the order than − every element of the set; and if there is no such number, then the set is unbounded. The problem I have with this is that order (and thus apparently quantity, and your "quantitative interpretation") is not an intrinsic property of a set, and a set has to be able to be described as finite or infinite regardless of what order is applied, or whether an order is applied, to it.

> As Dedekind infiniteness for sets is the only mathematically valid definition of infiniteness for sets, TO is full of crap.

> > Yes, I know, set theorists think they own the foundations of mathematics and theirs is the only valid approach.

> Their axioms and definitions rule.

They "rule"? Do you even realize how pompous that sounds? You deserve all the abuse you get for such an attitude, O Mighty Ruler.

> If TO wants to insist on a word, let him use "uncountable" since it is already defined and conveys the meaning he wants to convey.

"Countability" is a non−concept and a kludge, so you can keep that notion all for your own.

> For TO to insist on misusing a word already used for something else instead of using a perfectly good word which conveys his precise meaning correctly is the act of a troll. So TO is spelled TrOll

Sure, Virginal, very witty.

> > That would be fine if their system worked

> It works better that the system that TrOll has never been able to get off the ground. There are logically impeccable proofs of the properties which are claimed to follow from our system of axioms, whereas there are no proofs and not even any axioms for TrOll's.

> yes, I know, you'd be there heckling the Wright brothers before they even got to Kitty Hawk. Ho hum.

He does have a point about you not having a set of axioms. I'd be interested in seeing them; and I don't think I'd be willing to accept any arguments based on them until I saw the complete set of axioms. (Otherwise I'd never be sure that your conclusions didn't contradict some other axiom of your system.)

Matt

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