

# Re: Logarithm of transfinite numbers

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- *From:* "Ross A. Finlayson" <raf@xxxxxxxxxxxxxxxxxx>
  - *Date:* 6 Apr 2006 18:13:03 -0700
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Tony Orlow wrote:

Ross A. Finlayson said:

Virgil wrote:

In article  
<MPG.1e9df60b9a559eac98abf0@xxxxxxxxxxxxxxxxxxxxxxxxxxxxxx>,  
Tony Orlow <aeo6@xxxxxxxxxx> wrote:

MoeBlee said:

Tony Orlow wrote:

Actually, I  
can  
axiomatically  
state these  
things and  
treat Big'un  
as a  
primitive,  
and if I can  
derive no  
contradictions,  
and can  
derive  
useful  
results, you  
have  
nothing to  
complain  
about.

That would be good. But  
since you criticize other  
mathematics on

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the basis that its axioms  
aren't true as statements  
about a  
fundamental reality, then  
your own axioms are subject  
to such  
scrutiny too. I don't know  
why you would think it is so  
manifestly  
true that there is an object  
that exists as a fundamental  
reality  
that is the length of the real  
line but (if you do hold  
this:) that  
there isn't an object that is  
the set of counting numbers.

Yes, that's not a vacuous point, and one I can  
appreciate. Assuming a  
length to the real number line when it has no  
discernible ends does  
seem somewhat arbitrary, and that's why it  
needs to be assumed a  
priori, since it's not really a derivable value.

Thus TO is claiming that it is legitimate for HIM to assume  
things  
arbitrarily but not for anyone else?

But, if we say there  
exists this infinite line, then there is SOME  
length to it

Why does something that does not have ends have to have  
something that  
requires that it have ends?

It appears that the assumption that this  
value is not only the length of the line, but  
also the number of  
points within any unit segment of it

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It does not appear so to us, so that we will require formal proof of that claim.

Oh. Define 0.

The unique  $x(Ay \sim yex)$ .

That sounds like a definition of the null set ala von Neumann, but not necessarily going to the heart of what 0 is. Really, I was referring to its use in the Peano axioms, where is is taken as a primitive. I see no reason why it can't be taken as an assumed primitive and a starting place, and actually see this as a natural starting place for mathematics as a whole. Start with nothing.

That is precisely what von Neumann did, and is precisely what TO has violently objected to in the past only because it showed how stupid one of TO's arguments was.

What's your point?

We don't need protection from Tony here, Virgil, the above being one of your less abusive posts. I think Tony is sincere and quite pleasant, knowledgeable and sincere.

That's because I don't call you "Kerberos". Heh heh. Virgil's okay. He needs to bark. That's his job. I only get annoyed when my arguments are twisted into silliness dishonestly, which he doesn't seem to be doing TOO much these days. I think he has a right to defend what he believes. This is debate. Rock on, Ross!

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I suppose you won't reply. Do you have a point? It's probable that you should assume, say, a basically high level of mathematical sophistication of your readers, were you rational, perhaps in combination with social.

Don't you have anything positive to say? That does not reflect well, because of the negative things, where saying nothing is not necessarily the same thing as saying nothing nice.

You know Ross, Virgil serves his purpose. His challenges are welcome, when he gets specific about what questions he expects answered and what definitions need to be established in order to make the theory even remotely acceptable. If, heaven forbid, I can one day satisfy Virgil's requirements, it seems almost impossible that anyone else could have the tiniest objection. So, if he sets the bar high, good, that gives me something to shoot for.

Your denegate intervals and Han's infinitesimal probabilities are vital to IFR and the solution to the Continuum Hypothesis and more. It's a good thing, this. :)

There's a good point in saying that there are as many reals, on the line, between zero and one as there are naturals. Then when you sum their values over the naturals as is the generally understood method in the integral calculus or "Cholera bacilli analysis", that gives perfect and generally perfectly expected results. That's where the integral bar is an S for summation.

Absolutely right, and what Han's been arguing, alas, to no avail. It seems such a straightforward concept, and yet, mathematics has made a concerted effort to eradicate these bacilli, to the extent that it has destroyed its own beneficial E. Coli and can no longer digest new ideas without difficulty. I think we offer a form of mathematical yogurt, a central staple in the diet of any vital 168 year old Georgian horseman.

Basically post-Cauchy-Weierstrass in the quest for foundations of the eighteenth and nineteenth centuries certain results and counterexamples led to basically denial of the quite real utility, and thus in a way quite obvious formal soundness, of the infinitesimal analysis. That is where at the same time its justification is disguised as delta-epsilon, with basically the exact same notion and quite widespread usage of the Leibniz notation, how in the limit via infinite induction it works, including ratios of infinitesimals, eg  $dx/dy$ . Consider L'Hospital(e), and the quadrature (squaring, in 2-D), for different reasons, and the same.

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Obviously in my theory the points are polydimensional, with being one- or two-sided on the line, in continuity one-sided and with weight over the summation index of the index' reciprocal, scalar, in the polydimensional: inverse, with geometry in the large and small, the very.

There's something new, for you.

Yes, I haven't quite integrated your one- and two-sided points yet, though multidimensional points are not unreasonable in the limit.

The universe is infinite, infinite sets are equivalent. Familiar? How about the notion that there is a universe, would you agree that there is a universe. The more comprehensively it's examined the larger it gets. The more closely subatomic particles are examined the smaller they get. (Time stops for particle/waves with the HUP. Please explain gauge invariance.) Right: start with nothing, don't care. That's so it goes.

Obviously in my theory of axiomless natural deduction, currently A theory, there's only one theory with no axioms. Conveniently, only and all true statements are theorems.

I would like to see derivations of some theorems from first principles and pure logic. That's what I'm considering now in the my attempt at foundations. Have you managed to derive theorems formally this way? We need to do this, as they have, if we wish to get the Garden to flower again. Also worms. Lots of worms. We need worms. ;)

Ciao,

Ross F.

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Smiles,

Tony

## Re: Logarithm of transfinite numbers

Hi Tony, hey how's it going,

In terms of Virgil, your repartee, which was not necessarily unentertaining, to at least one external observer was not. When you two hit the mud slide there it detracts somewhat from the mathematical discussion, and particularly from yours. This is sci.math, humor is irrelevant but appreciated, it's also irrelevant, and the less sociable basically derision, particularly where unwarranted as are some of Virgil's comments to you, and in the past me, about such notions as, say, rationality and mathematical creativity, are unacceptable. Virgil, don't get me wrong, I would stand for your right to speak, my fist ends where your nose begins.

Nah, that's wishy-washy, Tony, I guess it's okay, the point is that you're okay with that, and that you as well respect even Virgil here. My problem is with Virgil's disrespect. I think he's chosen his own role much as you have, a different one for different reasons, because he purposefully never ventures.

Tony, with your  $N = S^L$ , or as I say  $b^p$ , that basically happens in the finite. In the infinite, where it's sufficient for  $b$  or  $p$  to equal one,  $S$  or  $L$ , i.e. unary or base infinity, then the real numbers of the unit interval exactly correspond in a 1-1 bijective mapping to the natural integers, and there is an obvious well-ordering of them, their natural ordering. Otherwise there is none, yet there is a well-ordering of the reals.

With regards to the powerset result and the antidiagonal argument to coded powerset in those terms, the powerset is successor is order type, in ubiquitous naturals, or in a pure naive set theory, of the elements that quantify the universe. With the mapping  $f(x) = x + 1$ , number to successor, that is the powerset mapping and illustrates how as objects are discovered in the universe, the functions between them emerge. In ubiquitous ordinals, the powerset is order type is successor, and the powerset is simply a "new" kind of ordinal, an ornate ordinal.

That allows there to be a universe, and quantifiers over said universe, without Cantor's paradox. (That's not the same as Russell and the Liar and their conflation.) The universe is infinite and infinite sets are equivalent. There is a universe, there is no universe in ZF, the universe is the constructible universe, or actually the constructed universe. There is a universe and over sufficiently primitive objects, based on the empty set, quantification over all objects in the universe results in the universe, thus ZF is inconsistent, as a simple expression of mathematical logic about mathematics, because no predicate always resolves to true, yet everything in ZF is a set. Every thing in ZF is a set, thus everything in ZF must be a set.

That leads to notions of infinities as irregular, not well-founded.

The notion of the unit infinity and infinitesimal, or scalar unit

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infinity and infinitesimal, I am happy to say that others who were in previous, say, years adamant against their consideration are not so disinclined today. It's an ancient notion that returns again and again after its denial, because it applies.

So, where reapplication of those intuitive notions, buttressed with mathematical logic justifying their existence, leads to reevaluation of primary results in measure theory, and the possibility of an entire new field of analytical results in the neo-classical, that's good.

Regards,

Ross F.

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