Re: Cantor Confusion

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- *From*: Han de Bruijn <Han.deBruijn@xxxxxxxxxxxxxx>
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Jonathan Hoyle wrote:

> Bob Kolker wrote:
>
> > Virgil wrote:
> >
> > > And it is plain that no sound mathematics can be developed unless based
> > > on some axiom system as its solid foundation.
> >
> > Arithmetic was around long before it was axiomatized and people were proving theorems about integers. For example Gauss and Euler.
>
> True, but you are ignoring Virgi's adjective "sound". Calculus existed way back during the time of Newton and Leibniz, but you could hardly call their use of the infinite and infinitessimals at all "sound" by today's standards. It wasn't until Bolzano and Weierstrass made things truly rigorous in the 19th century was Calculus anywhere near sound.

Allright. And they should have _stopped_ at this point in time.

> It is in fact their essential treatments that we are taught Real Analysis today, not Newton's. (Newton's work would be barely recognizable today with its "fluxions" and "fluents".)
>
> Bolzano and Weierstrass gave way to more rigor in numbers by Cantor, and then rigor in Set Theory by Zermelo and Fraenkel.

There was a pre−emptive war. Set Theory invaded Calculus.

> Then with the
> wonderful contributions of Hilbert, Lebesgue, Godel, and others,
> mathemaatics today is far more rigorous than it was over a century ago.

Thought we were talking about Calculus ...

> Even infinitessimals were consistently defined by Robinson.

I've never seen such useless things as Robinson's infinitesimals.

> With the
> exception of Aristotle's Logic and Euclid's Geometry, much of
> mathematics would not be considered acceptable by today's standards.

Who's "standards"? The problem with standards is that you have so many
to choose from. Are you imposing _your_ standards upon the rest of us?

> Even Guass and Euler played a bit fast and loose (although they were
> considered impeccably precise in their day.)

Huh? Would you say that absolute nitwits like Zermelo and Fraenkel, who
have contributed nothing to actual mathematics, are greater individuals
than Gauss and Euler? Did I really read this? Can't believe my eyes ...

> In ancient times, arithmetic was discovered in much the same way
> physical laws were. "Hey, notice that when we do this, that always
> happens..." As centuries of very hard work, mathematicians have boiled
> arithmetic assumptions down to some basic axioms, and all of the
> remaining theorems flow forth.

According to the Holy Gospel of Modern Mathematics, I suppose ...

http://web.maths.unsw.edu.au/~norman/views2.htm

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