

Re: Rigorous proof of natural numbers' properties (by Edmund Landau).

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From: Herman Rubin (hruhin_at_odds.stat.purdue.edu)

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In article <aa503d8.0407010721.aa5ec10@posting.google.com>, Leonard Blackburn <blackbur@math.umn.edu> wrote:
>David C. Ullrich <ullrich@math.okstate.edu> wrote in message news:<bbo7e0lb7719hasc4k2v0dtuac06daj0eh@4ax.com>...

<snip>

>> ****Landau doesn't _say_ that there is a function defining addition! He simply states that $x + y$ "can be defined" for all x and y .****

<snip>

>> *Hmm. I bet it's possible to construe things so that the gap exists only in things like my "translation" of what he wrote.*

<snip>

>*You have given me much to think about. Unfortunately I am in the process of moving to a new dwelling and am quite busy. I may get back to this later. But above, I think you have an excellent point. Now that I recall, the proof I was attacking was Professor Jodeit's translation of Landau's proof in which Jodeit asserts the existence of an addition function. I hadn't even read Landau at the time.*

>*Also, I think in a sense, Landau does just have gaps rather than errors, but I think it is possible that the gaps are serious in this respect: If one fills in Landau's gaps, then one will have a proof that is unnecessarily long. The tools used to fill in the gaps could be used to give a much simpler argument.*

>*Also, I apologize for not carefully considering how any of this applies to the OP's original questions. You are probably correct that my comments don't apply.*

sci.math: Re: Rigorous proof of natural numbers' properties (by Edmund Landau).

The easiest way to correct the gaps in Landau's approach for pedagogical purposes is to assume the existence of addition and multiplication; once these are in place, the rest follows.

In fact, I believe that we should teach the ordinal structure of the integers in first grade, and later tie the cardinal into it. These ARE different concepts. To do this, I would start the integers with 0, although this makes some things SLIGHTLY more complicated, and add powers so the usual notation can be done. The "definition" of addition in Landau states that "counting on fingers" is correct, and that of multiplication becomes repeated addition.

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This address is for information only. I do not claim that these views are those of the Statistics Department or of Purdue University.
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