

Re: Contradiction-free mathematics (The new nonstandard analysis)

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>A decimal is known by its digits. Therefore, it exists or is known or well-defined if every
>digit is known or computable. Being computable means there is an algorithm or rule or
>scheme for computing each digit or determining it uniquely from the basic
>integers 0, 1, . . . , 9. Since computation is a finite process, the set of such algorithms is finite.

This is clearly false. For each positive integer n there is a completely explicit, concrete algorithm for producing the decimal expansion of the square root of n .

This is simply my requirement for a decimal to exist or be well-defined, that every digit is known or computable or "determinable" uniquely.

My mathematical spaces consists of decimals (base 10) well-defined by the three axioms. Triadic numbers, binary numbers, base 5 numbers, etc., are simply different mathematical spaces well-defined by their respective suitable axioms.

Thus there are infinitely many
``decimals" (which is your word for decimal expansions of realnumbers) and infinitely many ``such algorithms."

When you LIST DOWN the rules for finding those digits they will turn out to be finite. In other words, you cannot write infinite rules.

Note that this does not depend on classical logic in any way. Both Bishop and Brouwer would agree that the set of algorithms which produce decimal expansions is infinite.

This is part of the inherent uncertainty of infinite set, that you cannot identify every element.

Cheers.

E. E. Escultura

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- **References:**

- ◆ **Re: Contradiction-free mathematics (The new nonstandard analysis)**
◇ From: matthias

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