

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

Source: <http://sci.tech-archive.net/Archive/sci.math/2006-02/msg00017.html>

- *From:* "E. E. Escultura" <escultur36@xxxxxxxxxxx>
 - *Date:* Tue, 31 Jan 2006 18:02:34 EST
-

```
> >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. Thus there are infinitely many
> ``decimals'' (which is your word for decimal expansions of real
> numbers) and infinitely many ``such algorithms.''
>
> 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.
```

It is even false for the set of natural numbers, as there is an algorithm for each natural and more than any finite number of naturals.

Although I have answered you questions in my responses to matthias@xxxxxxxxxxx and others I'll ma

A decimal is well-defined if every digit is known or computable, i.e., there is a rule or algorit

E. E. Escultura

.