

Re: abundance of irrationals

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Virgil wrote:

- > *In article <1105458371.912296.225750@f14g2000cwb.googlegroups.com>*,
- > *mueckenh@rz.fh-augsburg.de wrote:*
- > > *If you compare*
- > > *Cantor's work you will find that this was his position too.*
- >
- > *Decimal expansions are also "just names", not numbers, too.*

No, the natural numbers (in digits or bits for instance) make it to be more than a name. Numbers are required for counting, counting requires numbers. That is their primary duty. Rational numbers count in the unit of their denominators. Irrational numbers don't count at all.

There is

- > *always a distinction between the number and any of its*
- representations.*
- > *That some representations are more useful than others for certain*
- > *purposes does not mean that they are anything more than*
- representations.*

But you must be able to distinguish a number from any other one. Call pi by c or by p, as Euler did, before he adapted Jone's pi. None of these names gives you any information other than that there is a goal, which can be aimed however cannot be hit.

- >
- > *Depending on one's model, a real number is either a certain type of*
- > *partitioning of the rationals (Dedekind) or a collection of infinite*
- > *sequences of rationals (Cauchy sequences whose differences are null*
- > *sequences). It is not, in any truly mathematical model, merely a*
- decimal*
- > *expansion.*
- > >
- > > *Could you decide whether $\sqrt{m} < \sqrt{p}$, unless you have rational*
- > > *approximations for those names? That would be the minimum*
- requirement*
- > > *for a number. For $\sqrt{2}$ you know a lot of rational approximations*
- > > *which enable you to decide the $<$, $=$, or $>$ -question for a lot of*

other

> > *rational numbers. But you can't leave the rational domain.*

> > *Regards, WM*

>

> *Given either the partition form or the family of sequences form, as*

> *referred to above, of both numbers, such questions are trivial.*

The sequential form like $\sum 1/n!$ does not enable you to compare e with a slightly deviating number represented in decimal form, for instance, because you will not be able compare them for very large n . In the universe not more than $2^{10^{100}}$ numbers can be realized simultaneously. By far too less, to give e with "any" desired precision.

Regards, WM