

# uncountable n-tuplets?

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It seems that a lot of topological constructions can represent some kind of "number". For example,  $[0,1) \times \mathbb{N}$  represents the Reals. And  $\mathbb{R} \times \mathbb{R}$  represents the complex plane. There are all sorts of very useful mathematics that come from using the complex plane. Has anyone ever tried treating numbers as anything more? For example, what about triplets, like  $(x,y,z)$ . Or quadruplets?

Or why not an infinite tuple..  $(x,y,z,\dots)$  etc).

How about an uncountable tuple? Something like there is a tuple for each Real.

There is also the Long Line, which is  $[0,1) \times \mathbb{R}$ . Let's call that L. Can you have "long complex numbers" on a plane that is  $L \times L$ ?

Sorry if these are dumb questions, I was just wondering.. it seems like there is some kind of useful algebra for treating numbers in all kinds of forms, like tuples, and matrices... so why not any of the above?

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