

Re: Infinitesimals

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- *From:* Jason Simons <Simons@xxxxxxxxxxxx>
 - *Date:* Fri, 07 Dec 2007 14:17:34 GMT
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John Jones <jonescardiff@xxxxxxx> wrote in
<news:309fb09d-d438-40e9-b006-759d325d14bc@xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx>:

On Dec 6, 8:50i½am, herbzet <herb...@xxxxxxxxxx> wrote:

John Jones wrote:

Infinitesimals – are objects that cannot be observed by any direct means, but merely talked about... they are not so much a hidden object but an inaccessible object, yet still supposedly inhabiting the world of objects.

But I would have to know what makes the infinitesimal object inaccessible before accepting the idea of one. It is not their size that makes them inaccessible, for if we should shrink down to their level we would still not see one or point one out.

We don't need to "shrink down to their size" to observe them. Suppose I to be an infinitesimal less than any real number but greater than zero. i½Then $100 + I$ is an infinitesimal, but is "large" enough to "see".

I guess what you mean is that the difference between 100 and $100 + I$ is not distinguishable "to the eye".

So the inaccessibility of infinitesimals refers to an accessibility of an

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unknown type. This is a good enough reason to reject the infinitesimal as an object, or as descriptive of the world of objects.

I don't think anyone has observed a quark either. $\frac{1}{2}$ They are a hand

y

mental construct. $\frac{1}{2}$ It is possible, of course, that there are, in f

act,

objects that meet the description of "quark".

What are the criteria for object-hood?

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hz

Yes, shrinking down to 100 would mean avoiding the awkwardness of shrinking down to zero and then trying to work my way up. But if I have the ability to shrink (an ability borne by some of the Celtic heroes of old), I could equally shrink to 100+I, but I would have the same problem. I would still not be able to identify an infinitesimal. In fact, no sizing variable, like shrinking ability, could get me to meet an infinitesimal.

So, an infinitesimal is not characterized by size, and if size is necessarily represented by sequence, then an infinitesimal is NOT in the sequence. Quarks also, may not be physical objects, if all physical objects can be sized. If they are not physical objects, then I am thrown into a fog of my own making if I claim that 'the quark' physically exists.

I have put myself into circles thinking about infinitesimals for years. I suspect that 'infinitesimal names numbers' (yeah no different than any other) that under certain circumstances (which becomes the new problem) become irrelevant.

Did Newton observe that the distances got so small so quickly that in one sense the order of magnitude (needs to be defined) difference becomes unimportant in one sense, but remains important in the other?

In the differential the measurement would be invisible (because our instrument for viewing would always miss it), but it isn't zero either. If we change our instrument of measure to be smaller, the difference would again be an order of magnitude smaller so as to be unmeasurable.

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The problem now is to define "order of magnitude."

I don't know if this is helpful or not, just thought I'd add where I've been on this.

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