Re: infinity

Source: http://sci.tech−archive.net/Archive/sci.math/2005−10/msg02340.html

* *From*: Tony Orlow <aeo6@xxxxxxxxxxx>
* *Date*: Thu, 20 Oct 2005 12:33:48 −0400

Virgil said:
> In article <MPG.1dc05554d78c02f798a4ec@xxxxxxxxxxxxxxxxxxxxxxxxx>,
> Tony Orlow <aeo6@xxxxxxxxxxx> wrote:
>
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> > > In article <MPG.1dbefa3f98322bc798a4ce@xxxxxxxxxxxxxxxxxxxxxxxxx>,
> > > Tony Orlow <aeo6@xxxxxxxxxxx> wrote:
> > >
> > > > Virgil said:
> > > > > In article <MPG.1dbdd071596c8b3798a4be@xxxxxxxxxxxxxxxxxxxxxxxxx>,
> > > > > Tony Orlow <aeo6@xxxxxxxxxxx> wrote:
> > >
> > > > > > It has some interesting implications, even if mostly of a
> > > > > > philosophical nature. It does exactly mirror the 2's complement
> > > > > > system, in the limit as the number of bits goes to oo. Now, doesn't
> > > > > > the addition of the imaginary dimension, also circular, create a
> > > > > > toroidal topology, rather than spherical?
> > > > >
> > > > > Not with a one−point compactification. If TO knew a bit more about
> > > > > mathematics, before setting himself up as genius mathematician, he
> > > > > would
> > > > > fall flat on his face less often.
> > >
> > > > A one−point compactification as in both axes meeting in more than one
> > > > location?
> > >
> > >
> > > As in all axes and both ends of each axis all meeting in one single
> > > point. It is topologically quite sound. That TO does not understand it,
> > > is in no way a drawback to its validity.
>
>
> > But it is topologically different from flat space, whereas toroidal surfaces
> > are homeomorphic to flat space curved on itself.
>
> A spherical surface with one point deleted is homeomorphic the
> Cartesian plane.
>
>

> In other words, a toroidal
> > surface can be unrolled into a rectangle, and the independence of the
> > dimensions within that surface is preserved. On a spherical surface, the
> > dimensions whichare at one point orthogonal are at another point parallel. At
> > least, I understand that much of it, which Virgil seems no to.
>
> There is no particular virtue in preserving an arbitrarily imposed
> system of coordinates in relating one surface to another. If the two
> surfaces are homeomorphic, that is enough, but the plane and the torus
> are not. The plane and the punctured sphere are.
> > >
> > > > That causes points opposite the origin, where the axes again meet, to
> > > > simultaneously have x and y values of both 0 and oo. It doesn't work, if
> > > > that's
> > > > what you mean. If not, explain. A sphere is topologically different than
> > > > a
> > > > torus.
> > >
> > > The one point compactification is much more geometrically obvious for a
> > > plane than a toriodal compactification:
> > >
> > > The geometry is simple, and corresponds to an actual mapmaking technique:
> > >
> > > Put a sphere tangentially on top of a horizontal plane in a 3D space,
> > > and consider lines through the topmost point of the shpere intersecting
> > > the sphere in a second point and and intersecting the plane in a point.
> > > Match the second point on the sphere with point on the plane and vice
> > > versa to get a bijection between the sphere less its topmost point and
> > > the plane. Then every point on the plane matches a point on the shpere
> > > and every point except the topmost one on the sphere matches a point on
> > > the plane.
>
> > Yes, the topmost point maps to an infinite circle.
>
> The topmost point does not "map" to anything.
>
>
> > >
> > > Open sets in the plane map to open sets in the deleted sphere and closed
> > > sets map to closed setsand the reverse,so the bijection is bicontinuous
> > Sure, you can create a bijection there, but it is rather a warped mapping,
> > don't you think?
>
> Any mapping of the plane to any finite surface is warped.
> > >
> > > And the topmost point of the sphere becomes the one point
> > > compactification, as the completed sphere is compact.
>
> For The sphere there is only one anomalous point, on the torus, there
> are two anomalous "circumferences" and their point of intersection.
What is anomalous about the two coordinate axes crossing at a single point?

That is the point of using a toroidal surface, so coordinates are consistent.
The curved 2D cartesian plane cannot exist as the surface of a sphere.
>

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Smiles,

Tony
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- ***Follow−Ups***:
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- ***References***:
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    - *From:* Jonathan Hoyle
  - ***Re: infinity***
    - *From:* Jonathan Hoyle
  - ***Re: infinity***
    - *From:* Tony Orlow
  - ***Re: infinity***
    - *From:* Virgil
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