

## Re: Is continuum completely filled up?

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- *From:* Andy Smith <[Andy@xxxxxxxxxxxxxxxxxxxxxxxx](mailto:Andy@xxxxxxxxxxxxxxxxxxxxxxxx)>
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David R Tribble writes

Indeed, it looks like every time you find a "gap" between two reals, you then find another real point to "fill" it. So if you continue this quest for gaps indefinitely, won't you end up filling them all up and thereby produce a completely "filled" line?

Looking at it another way, for any two unlike reals you can always find a third real (actually an infinite number of reals) that lies between them. So the logical conclusion is that there is no "gap" between any two reals because there is always a real there to fill that gap.

So we ask, where are all these gaps between reals you are talking about? Does a "gap" mean a place in the real line where there is no real point?

Yes, but isn't this a bit of a chicken and egg argument. every time I produce a gap, you produce (an infinity) of reals in it. But then I identify more gaps between those reals, and so on. If one takes a gap oriented view of your argument, for any two unlike reals there is a gap between them, so then the logical conclusion is that there are as many gaps as reals?

I don't actually trust any such arguments one way or another.

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Andy Smith