

Re: Questions about Axiom of Choice

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Daniel Grubb wrote:

1.– It is a "pure existence" statement, that is it tells something exists but not what it is. Is math not full of these kinds of statements?

It is now. Until relatively recently, an existence proof was required to give a method of construction.

2.– Some of its implications are weird or counterintuitive. Can someone please explain some of these?

My favorite is the Banach–Tarski paradox: it is possible to take the unit ball (i.e. radius 1) in three dimensional euclidean space, divide it into a finite number of pieces, move those pieces around via rigid motions (i.e. translations and rotations), and re-assemble them into a ball of radius 2.

--Dan Grubb

Thank you and everyone who replied. This is a really dumb question but is it not possible to prove or disprove this physically? That is we can construct a solid unit radius ball, cut it up into a finite number of pieces (according to some procedure) and produce the new (solid?) bigger ball? Thanks again.

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