DEPT OF MATHEMATICS AND STATISTICS • COLLOQUIA 2011–12

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Natural Numbers?

ABSTRACT

When is it justified to assert an existence claim in mathematics? The standard view, at least implicitly, is that you can assert the existence of some specified mathematical entity when and only when you have a proof that it exists. Thus open existence questions in mathematics (do there exist infinitely many twin primes? does there exist an odd perfect number?) are those for which the mathematical community currently lacks a proof.

In this talk I want to raise some problems for this standard view. I will present some examples in which we ought to believe a mathematical existence claim (or so I shall argue) despite lacking a proof of it, and — conversely — other examples in which we ought not to believe a mathematical existence claim despite possessing a proof of it.

TUESDAY, NOVEMBER 15, 2011 • TEA AT 4:15, TALK AT 4:30 • SCIENCE CENTER 199