

**Undergraduate Math Club
Winter 2008
2nd floor Nesbitt Common Room
Thursday, April 3, 4:10-5:00pm
(free pizza and pop, as always)**

The seven color theorem

Prof. Stephen DeBacker

Abstract

Two countries on a map (on, for example, a sphere) are said to be adjacent provided that they have at least one common boundary. (A country is assumed to be bounded by a closed curve; so, for example, Japan and the United States fail to be countries under this definition.) What is the smallest number of colors required to color the countries on the map so that adjacent countries have different colors?

It is a celebrated but (as far as I know) humanly impossible-to-verify fact (1976) that every map on a sphere is four-colorable. It turns out that for surfaces with holes (such as a donut), the question has an elegant solution. In this talk we shall discuss the fact (1890) that the one-holed surface is seven-colorable.