

A VARIATION ON THE FOUR COLOR PROBLEM

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ABSTRACT. The Four Color Problem asks if every planar graph can be colored with only four colors so that adjacent vertices are assigned different colors. For nearly one hundred years, the answer to this question was unknown, and there were many erroneous proofs. The first published proof, submitted by A. Kempe, was believed to be the solution for several years until it was found to be incorrect by P. Heawood. However, Heawood was able to use Kempe's technique to prove that five colors are enough to color any planar graph. In addition to this, Heawood considered the same question with a twist - how many colors are required for graphs embedded on surfaces other than the plane? This is the question that motivated the Heawood Conjecture, also known today as the Ringel-Youngs Theorem. The objective of this talk is to introduce this other coloring theorem, as well as some related questions.

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