Four Color Theorem

Arden Rasumssen Jerome Regovich

December 7, 2017

Abstract

In this presentation we will look at the historical significance of the Four Color Theorem and the proofs for it. The Four Color Theorem states that any map (or planar graph) can be colored with only four colors no matter how complex the borders, so that no two neighboring faces share a color. The first proof was made by Kenneth Appel and Wolfgang Haken. They proved the theorem with computers. The fact that a computer did much of the work caused a lot of controversy, as it was impossible for a human to check that the computer did its work properly. In the presentation we will discuss the proof by Appel and Haken in further detail. In summary, they utilized a computer to prove it for a set of 1,936 maps, and used this to demonstrate that it must work for all maps. Since the first proof, the solution has been optimized but as it the necessity of computer assistance is still necessary. The significances of this proof, is that it is the first major proof made with computer assistance. Thus it opened the possibility for using computers in more proofs.

References

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