

Graduate Talk

Galois theory, Newton's method, and something you probably didn't know about A_5

Abstract

Newton's method and Galois theory both deal with solutions of equations, yet seem very different – one gives numerical approximations, while the other concerns algebraic relations among the roots. This lecture will explore some of the surprising connections between these methods. As we will see, the alternating group A_5 plays a crucial role.

Colloquium Lectures I – III

Abstract

In recent years, the tools of linear algebra have been applied with great success to the solution of systems of nonlinear polynomial equations in multiple variables. My three lectures will sketch some of the main results and discuss some of the surprisingly rich mathematics that arises. After showing some fun ways to solve algebraic equations, I will discuss topics such as factoring polynomials over number fields and finite fields, primary decomposition, and Galois theory.