Undergraduate Math Club
Fall 2007
2nd floor Nesbitt Common Room
November 15, 4:10-5:00pm
(free pizza and pop, as always)

Tropical math, or why 3+5=5 sometimes

Professor Hannah Markwig

Abstract

In algebraic geometry, we can study geometric objects (e.g. plane curves) with the help of their defining equation. For example, the equation x^2-y=0 defines a parabola in the plane and we may try to describe its properties using the equation. Polynomial equations are sometimes hard, so we replace them with tropical polynomials. In tropical math, the operations of addition and multiplication are different. For example, 3+5=5 tropically. We will see how tropical polynomials can define plane curves that look a lot different from curves you are used to. A tropical line will, for example, consist of three infinite rays meeting at a vertex. We will see that these weird objects are still similar to usual curves, and can be useful for studying ordinary curves!