

The Oliver Club

www.math.cornell.edu/~oliver/

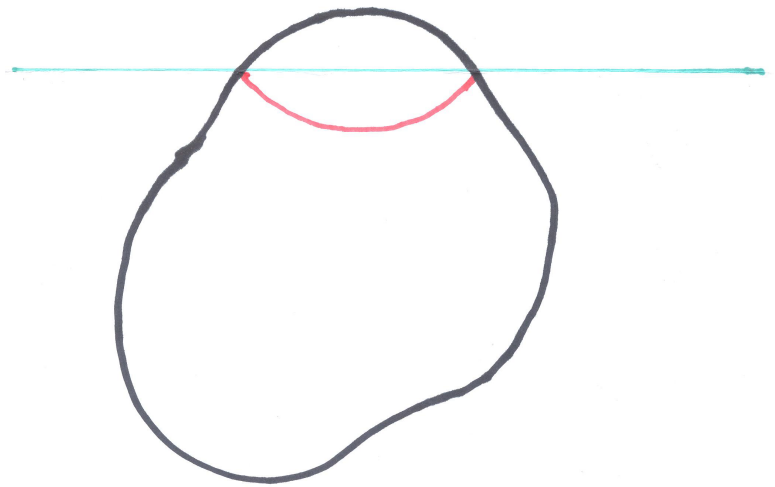
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Harmonic Functions and Beyond

A harmonic function of one variable is a linear function. A harmonic function of two variables is the real or imaginary part of an analytic function. A harmonic function of n variables is a function u satisfying

$$\frac{\partial^2 u}{\partial x_1^2} + \dots + \frac{\partial^2 u}{\partial x_n^2} = 0$$

We will first recall some basic results on harmonic functions: the mean value property, the maximum principle, the Liouville theorem, the Harnack inequality, the Bocher theorem, the capacity and removable singularities. We will then recall the maximum principle for solutions of linear elliptic equations of second order, and to introduce the method of moving planes — a useful method in the study of partial differential equations and differential geometry. Finally we will present a number of more recent results on some conformally invariant elliptic and degenerate elliptic equations arising from conformal geometry. These include results on Liouville theorems, Harnack inequalities, and Bocher theorems.



Thursday, April 12, 2012
at 4:00 PM in 532 Malott Hall

Refreshments will be served at 3:30 PM in the Mathematics Department lounge (532 Malott Hall).