Ohio Section MAA

Fall Meeting
October 27-28, 2006
Muskingum College

Abstracts of Invited Addresses

Friday

Speaker: David Singer
Title: *Focusing on the Critical Points of Polynomials*
Abstract: An early result in freshman calculus locates the critical point of a quadratic polynomial at the midpoint of the interval joining its two zeroes; this even remains true when the roots are complex. Not as well known, though, is a theorem of Bocher and Grace which locates the critical points of a cubic polynomial at the foci of a certain ellipse. This talk will explore the geometry of this result and some of its generalizations.

CONCUR Panel Discussion
Moderator: Cathy Stoffer
Panelists: Marsha Guntharp, Richard Little, Carol Phillips-Bey, Harold Putt
Title: *Future of the Entire College-Level Mathematics Curriculum*
Abstract: Panelists will be addressing curriculum issues in different concentration areas, such as math education, the mathematics major, computational science, actuarial science major, mathematical economics, etc.

Speaker: Curtis Bennett
Title: *Understanding the Thurston Model of Hyperbolic Space*
Abstract: A common model of hyperbolic space, introduced by Bill Thurston and mentioned in *The Shape of Space* by Jeff Weeks, involves gluing together equilateral triangles so that 7 meet at every vertex. In *The Heart of Mathematics***,** Ed Berger and Michael Starbird pose the question of drawing a large triangle on this space and measuring its angles. Drawing such a triangle turns out to be curiously difficult. In this talk we will investigate why this is difficult, taking a tour through Pick's Theorem, Euler's Formula, and the relationship between lines in the model and lines in hyperbolic space.

Saturday

Speaker: Bernd Sturmfels
Title: *The Joy of Solving Equations*
Abstract: Gröbner bases are a fun method for solving algebraic equations. See how it works, why it is useful, and what you should do with the change in your pocket.

Speaker: Curtis Bennett
Title: *Averaging, Discrete Means, Coalition Building, and a Paradox of Social Choice*
Abstract: What would be an example of a family with an *average* number of 1.7 children? Alternatively, suppose members of a department all wanted to donate the same dollar amount to a worthy cause (like the MAA), but would vote to decide how much. In this talk we shall look at such questions and how coalitions can distort the traditional average. We shall then look at what axioms a mean on a discrete set should satisfy to avoid the danger of coalition building, the implications of these axioms, and a paradoxical result.