

UNDERGRADUATE MATHEMATICS SEMINAR

We hope you enjoyed the first seminar of the term this past Tuesday! In an effort to make the seminar series attendable by the widest possible audience, seminars will not be fixed to any one particular day-of-week, and on occasion, the time-of-day might change slightly. In general, some seminars will be Monday afternoons and others will be Tuesday afternoons and it is best to consult either the newsletter, the signs that will be posted throughout Bailey Hall, or perhaps the Student Seminar webpage on the Math Department website: <http://www.math.union.edu/activities/seminars/student/welcome.html> to find the date, time, and location of the next seminar.

The next seminar of this term will be

DATE: **TUESDAY, September 22nd**

Time & **4:15pm** – Refreshments in the Math Common Room, **Bailey 204**

Location: **4:30pm** – Seminar in **Bailey 207**

In this seminar, **Professor Frank Morgan** of **Williams College** will deliver the talk described below. Professor Morgan works in minimal surfaces and studies the behavior and structure of minimizers in various dimensions and settings. He has authored six books and well over 100 math articles, has supervised numerous undergraduate and graduate research projects, and has won several teaching awards. The seminar should be a treat!

TITLE: What Is Surfaces with Density, Isoperimetric Problems, and Perelman's Proof of the Poincaré Conjecture

ABSTRACT: A density on a surface, just as in freshman physics, is just a positive function, used to weight perimeter and area. The isoperimetric problem seeks to enclose given (weighted) area with least (weighted) perimeter. All of these ideas came together in Perelman's proof of the Poincaré Conjecture. There are no prerequisites for this talk.

Professor Cervone's jsMath and MathJAX Highlighted in Article

As many of you know, typesetting beautiful mathematical formulas like

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

is usually handled by using a program called TeX, or any of its subsequent variants or add-ons, such as LaTeX. But typesetting math within a webpage has been a much more difficult matter. In the article "Writing Math on the Web" in the May/June issue of *American Scientist*, <http://www.americanscientist.org/issues/pub/2009/3/writing-math-on-the-web/1>, (a hardcopy is available in the Math Common Room) Brian Hayes describes how this has been managed, highlighting the work of Union College's math **Professor Davide Cervone**. In 2004, Prof. Cervone made a tremendous contribution by creating jsMath, a JavaScript translator of TeX (see <http://www.math.union.edu/~dpvc/jsMath/welcome.html> for more information). Currently, Prof. Cervone is on sabbatical working on a follow-on project called MathJAX (see <http://www.mathjax.com/>).

Professor Taylor Assumes Chairmanship of Math Department

With Professor Cervone on sabbatical, **Professor Alan Taylor** has become the new chairman of the math department, a post he held previously in the years 1985 - 88, and 1989 - 90. Please congratulate Prof. Taylor on his appointment to this position!

Resources for Students

- Free tutoring! The Math Department offers a free tutoring service for students enrolled in its calculus courses through Math 115. The **Calculus Help Center** is open five nights a week, Sunday through Thursday, from 7:30pm to 10:00pm in the seminar room of Sorum House.
- Math Conference at Smith College WIMIN '09, Women in Mathematics in New England is a one-day conference at Smith College on **Saturday, Sept. 26**. This (free) conference features plenary talks by Mia Minnes (MIT) and Anna Lysyanskaya (Brown), short talks by students (many about their summer REU experiences), lunch, and a panel discussion of the life of a graduate student. To register, go to <http://maven.smith.edu/~jhenle/wimin09/>. **Hurry!** The registration deadline is **today**.
- Get a Job! It is not too early to begin thinking about *next* summer or life after graduation. Toward that end, you might want to visit the Becker Career Center (BCC) on campus and meet some of the people who would like to help you, or at least visit their website www.union.edu/StudentLife/BeckerCareerCenter. Seniors, be aware that All Seniors who wish to participate in recruitment activities with the Career Center must attend one Senior Orientation session. The remaining sessions, all held in BCC, are schedule for: **Sept. 21, 6:00pm; Sept. 22, 3:00pm; Sept. 23, 1:00pm; Sept. 24, 4:30pm**. This newsletter will try to advertise opportunities, relayed by Becker, that might appeal to math majors, including
- Boston Career Fair and Interview Program Prep Session If you are looking for a job or internship in Boston, you should attend an informational meeting **Sept. 23, 5:00pm** to learn how to best prepare. Then, there is the **Oct. 13** deadline to apply for Interview Day, which will be held on **Nov. 6** at the Tremont Hotel in Boston.

Class of 2009: Stay in Touch

Union College email accounts of recent graduates are set to expire at the end of September. To continue receiving the Math Newsletter, please send your preferred email address to Professor Friedman at friedmap@union.edu.

Problem of the Newsletter: September 18, 2009

Congratulations to **Jay Dulmaa '13** for submitting a correct solution to last week's problem, "The Monty Hall Problem." The wiki entry for this problem (http://en.wikipedia.org/wiki/Monty_Hall_problem) is quite interesting, and copies of it have been posted on the bulletin boards around Bailey Hall

Here is this week's problem: In the Cartesian plane, consider the set of points $A = \{(i, j) \mid 0 \leq i, j \leq 40, i, j \in \mathbb{Z}\}$. How many squares can be formed so that all corners of all squares belong to A , with sides parallel to the x and y-axes?

Professor Friedman will accept solutions to this problem until noon Thursday, September 24th. Email your solution to him (friedmap@union.edu) or put it in his mailbox in the Math Department's office on the second floor of Bailey Hall.