

MATHEMATICS RESEARCH SEMINAR

Periodically, the math department members hold seminars to discuss current research or fields of interest that they are pursuing or studying. The next such seminar will be

DATE: **TUESDAY, November 17nd**

Time & Location: **11:00am in Bailey 201**

In this seminar, Union College's **Professor Chris Hardin** will present the following talk:

TITLE: Limits of Arbitrary Functions?

ABSTRACT: Suppose we know the values of a function f (on the real numbers, say) near but not at x . If f is continuous, we can determine $f(x)$ by taking a limit. But what if f is an arbitrary function, not necessarily continuous? At any predetermined point x , we have little hope of correctly guessing x . Nevertheless, we can exhibit a strategy for predicting values of f from nearby values that is guaranteed to be correct for almost every x , regardless of the function f ; in particular, if x is chosen at random in $[0,1]$, and we are asked to guess $f(x)$ based on nearby values of f , the strategy will guess correctly with probability 1. While exploring how this is done, we will look at topological analogs of well-foundedness and induction.

Where is Professor Tønnesen-Friedman?

Greetings from Nantes, France! (By the time you read this, I will probably be home on the range again.) For the past week, I have been at a workshop called "On Kähler and Related Geometries" organized by Yann Rollin and Gilles Carron. Kähler Geometry is the field of mathematical research that I work in and it is great hearing all the talks on new research and new ideas. Earlier today, November 12th, I presented a talk on some work that I did recently with Gideon Maschler entitled "Generalized Quasi-Einstein Metrics on Admissible Manifolds. Now, I am taking a short rest at the hotel – getting the chalk off my hands - before the conference dinner. (Yes, mathematicians party too!)

At this workshop, I have been reconnecting with many old friends whom I have met at previous conferences and meeting new people as well. I am happy to see more women at this conference than there have been in the past. Sometimes there are just a couple, but this time we are 5-6 out of about 40 participants.

It is a bit tricky to leave Union College during a trimester and I am grateful to **Professors Susan Niefeld** and **Paul Friedman** for teaching my classes in my absence. I am also really thankful for the Advanced Education Grant that I received from the SUN Network (Faculty Development Opportunity For Women in STEM Disciplines sponsored by the National Science Foundation and ADVANCE Grant 0820032) to help fund the trip. Thanks to **Professor Brenda Johnson** for suggesting that I apply.

Calculus Help Center Tutoring Positions for Winter 2010 Available!

Professor Friedman is now accepting applications for a vacant Calculus Help Center tutoring position. Tutors work in the CHC one night per week (Sun-Thurs) from 7:30-10:00.

Qualifications: Calculus through Math 115 with grades of no less than A-. Preference will be given to students who

- have also completed Math 117 (with a grade of no less than A-)
- are considering becoming a math teacher or pursuing graduate work in mathematics
- have other tutoring experience (not necessary, though)

To apply for a position, send an email to friedmap@union.edu expressing your interest, listing your mathematical background (including coursework and grades), tutoring experience (if any), and discussing why you think you would be a good tutor. **Application deadline: Thursday, Nov. 19 at NOON.**

Fall 2009 Math Final Exam Schedule

<u>Course #</u>	<u>Course Name</u>	<u>Professor</u>	<u>Room</u>	<u>Day</u>	<u>Date</u>	<u>Time</u>
IMP*111*01	Int Math/Physics 1	Lesh, K.	NWSE 112	Thu	Nov 19	8:30 - 11:30 A.M.
MTH*054*01	Number Theory	Rosenthal, K.	BAIL 100	Tue	Nov 24	9:00 - 11:00 A.M.
MTH*055*01	Ancient Greek Mathematics	Barbanel, J.	BAIL 201	Fri	Nov 20	8:30 - 10:30 A.M.
MTH*100*01	Calculus with Precalc 1	Noussi, H.	OLIN 115	Thu	Nov 19	11:30 - 1:30 P.M.
MTH*100*02	Calculus with Precalc 1	Noussi, H.	OLIN 115	Thu	Nov 19	11:30 - 1:30 P.M.
MTH*110*01	Calculus 1	Reynolds, P.	BAIL 102	Mon	Nov 23	8:30 - 10:30 A.M.
MTH*110*02	Calculus 1	Plofker, K.	SSCI 104	Thu	Nov 19	11:30 - 1:30 P.M.
MTH*110*03	Calculus 1	Plofker, K.	SSCI 104	Thu	Nov 19	11:30 - 1:30 P.M.
MTH*110*04	Calculus 1	Taylor, A.	BAIL 100	Thu	Nov 19	8:30 - 10:30 A.M.
MTH*110*05	Calculus 1	Rosenthal, K.	BAIL 104	Mon	Nov 23	2:30 - 4:30 P.M.
MTH*113*01	AP Calculus	Hardin, C.	HUMN 019	Thu	Nov 19	11:30 - 1:30 P.M.
MTH*113*02	AP Calculus	Hardin, C.	HUMN 019	Thu	Nov 19	11:30 - 1:30 P.M.
MTH*113*03	AP Calculus	Tonnesen-Friedman	BAIL 207	Mon	Nov 23	8:30 - 10:30 A.M.
MTH*113*04	AP Calculus	Blue, J.	BAIL 100	Thu	Nov 19	11:30 - 1:30 P.M.
MTH*115*01	Calculus 3	Wang, J.	BAIL 201	Thu	Nov 19	8:30 - 10:30 A.M.
MTH*115*02	Calculus 3	Blue, J.	BAIL 207	Thu	Nov 19	8:30 - 10:30 A.M.
MTH*115H*01	Enriched Calculus 3	Zwicker, W.	BAIL 201	Mon	Nov 23	8:30 - 10:30 A.M.
MTH*117*01	Calculus 4	Tonnesen-Friedman	BAIL 207	Fri	Nov 20	8:30 - 10:30 A.M.
MTH*199*01	Intro to Logic & Set Theory	Zimmermann, K.	BAIL 104	Thu	Nov 19	8:30 - 10:30 A.M.
MTH*219*01	Topics in Discrete Math	Niefield, S.	BAIL 104	Fri	Nov 20	8:30 - 10:30 A.M.
MTH*330*01	Complex Analysis	Friedman, P.	BAIL 201	Mon	Nov 23	2:30 - 4:30 P.M.
MTH*336*01	Real Variable Theory	Zwicker, W.	BAIL 201	Mon	Nov 23	11:30 - 1:30 P.M.

Problem of the Newsletter: November 13, 2009

Congratulations to **Schuyler Smith** for correctly solving last week's problem. His winning solution can be found posted on the bulletin boards throughout Bailey Hall.

Here is this week's problem: Reversing polynomials: Consider a quadratic $p(x)=ax^2+bx+c$ with $a, c \neq 0$ with roots r_1 and r_2 . Form the "reverse polynomial", $q(x)=cx^2+bx+a$. How are the roots of $q(x)$ related to the roots of $p(x)$ [i.e., express simply the roots of $q(x)$ in terms of the roots of $p(x)$]? Further, how do the roots of a cubic polynomial $p(x)=ax^3+bx^2+cx+d$ ($a, d \neq 0$) compare to the roots of its reversal $q(x)=dx^3+cx^2+bx+a$? Is there a general result?

Professor Friedman will accept solutions to this problem until noon Thursday, January 7th, 2010(!) 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.