UNDERGRADUATE MATHEMATICS SEMINAR

Welcome back! The first seminar of the spring term will be:

DATE: MONDAY, April 6th
Time & 4:45pm – Refreshments in the Math Common Room, Bailey 204
Location: 5:00pm – Seminar in Bailey 207

In this seminar, two members of this year’s Union College MCM team, Peter Bonventre ’11 and Steven Neier ’11, will present a talk based on the problem they solved during the competition.

(For more information about their MCM experience, please read their article in the February 27, 2009 issue of this newsletter.)

TITLE: Mathematical Modeling of Cell Phone Energy Usage

ABSTRACT: During the 2009 Mathematical Contest in Modeling (MCM), we (with John Robens) modeled the energy consequences of the cell phone revolution. We worked on various aspects of the energy consumption of cell phones by people, involving many different methods of usage including charging, standby, and manufacturing. Our process involved stages of lots of research, followed by simple models that gained complexity as we added more aspects to the solution. Overall, we modeled the energy transition from the current US usage of cell phones and landlines to a strictly cell phone infrastructure. We then modeled the ideal infrastructure for a pseudo-US based on our earlier calculations and models, and found that exclusive cell phone use was more energy-efficient than any combination of cell phones with cordless landline phones. We also modeled the energy waste of various household electronics and appliances from standby power consumption. Finally, we combined our model from cell phone energy consumption with models for US population and economic growth to determine the cell phone usage for the next 50 years. This contest was an enlightening experience that we would like to share and encourage others to participate in the years to come.

Hudson River Undergraduate Mathematics Conference: Calling All Students!

As you probably know, Union College is hosting the HRUMC this year on April 18th. This is one of the largest regional undergraduate mathematics conferences in the entire country – and to make it run smoothly, we need your help!

There are many ways you can help with this event ranging from helping with set-up, with conference registration, directing the 400 visitors around our campus, to providing IT help, to chairing session talks.

If you would like to volunteer to help with this event please e-mail Ben Miles at bmiles@union.edu. You will probably present at a conference at sometime in your mathematical career at this is an excellent chance to see the workings from behind the scenes!
Congratulations to Schuyler Smith for submitting a correct solution to the most recent Problem of the Newsletter. You can see his winning solution on the bulletin boards in Bailey Hall.

Here is this week’s problem: This past Saturday, the University of Rochester held its third Math Olympiad. Student from 14 colleges and universities in New York State were given four problems to solve in three hours. The first problem in that competition is this term’s first Problem of the Newsletter:

Let \( n \) and \( k \) be positive integers. An \( n \)-digit whole number \( X = A_1A_2...A_n \) is called \( k \)-transposable if \( kX = A_2A_3...A_nA_1 \). Prove that there exist only two 6-digit 3-transposable (i.e., \( n=6 \) and \( k=3 \)) numbers and find them.

Professor Friedman will accept solutions to this problem until 12:00 noon Thursday, April 9th. 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.