UNDERGRADUATE MATH SEMINAR

The next seminar of the term will be

DATE: FRIDAY, October 9
Time & 4:45pm – Refreshments in Bailey 204
Location:  5:00pm – Seminar in Bailey 207

In this seminar, Professor Caner Koca, a differential geometer from CUNY will present the following talk:

TITLE: Complex Calculus

ABSTRACT: About a century after the invention of Calculus by Newton and Leibniz, mathematicians such as Euler, Gauss, Riemann and Cauchy discovered and developed a complex-number version of all the key ideas in calculus, such as differentiation and integration. In this new theory, one looks at complex-differentiable functions from complex numbers to complex numbers, and studies their properties. This analogy, though very formal, can sometimes lead to really unexpected, surprising and slightly disturbing facts! For example, the complex sine and cosine functions turn out to be unbounded, or the complex exponential function is periodic.

In this talk, we will see the basics of the theory of complex functions, and outline some of the similarities and differences between real and complex calculus. I will give special emphasis on how one can visualize and graph some of these complex functions, especially of the so-called multi-valued complex functions, which in turn give rise to some of the fascinating examples of Riemann surfaces.

News from the Math Club

The Math Club met for its second meeting of the term on this past Tuesday, and lots of great ideas were brought up! We will be having a Movie Night event on next Wednesday, October 7th, where we will be showing the movie Pi. Pizza will be served as well. Don’t miss out!

We also discussed some upcoming events, like a possible dinner with the new math professors. Our next meeting will be in two weeks, on Tuesday the 13th of October. For any questions or if you want to be added to the email list, contact Frank Rocco at roccof@union.edu or Nate Hawthorne at hawthorn@union.edu.
Read About Some Neat Math in “The Monthly”

The Mathematical Association of America (MAA) publishes a wonderful monthly journal, “The American Mathematical Monthly”, to which the math department and Union College has a subscription. Copies of this can be found in the Math Common Room, Bailey 204. They are also available online through the Union College Library.

This month’s issue has an article by Tom Apostol and Mamikon Mnatsakanian that students who enjoyed computing volumes and surface areas of solids of revolution might find in interesting: Volume/Surface Area Relations for n-Dimensional Spheres, Pseudospheres, and Catenoids. The paper starts by defining a tractrix as “the trajectory of a toy on a taut string being pulled by a child walking along a fixed straight line (the x axis in Figure (a) above).” After revolving this around the x-axis to form the pseudosphere (named because it has several properties (curvature, surface area formulas) believe it or not, that are analogous to a sphere, the authors derive several new analogies between the pseudosphere and the sphere, including one about surface area suggested by the colored picture above. After this, they discuss some higher-dimensional results and much much more. Have some fun and check it out!

Problem of the Newsletter: October 2, 2015

Last week’s problem: Congratulations to Andie Jia for attacking last week’s problem. You can see a copy of her winning solution to the problem posted on the bulletin boards around Bailey Hall.

This week’s problem was suggested by recently retired math professor Julius Barbanel. After reading the Numberplay column in a recent New York Times, he forwarded the problem offered by Matt Enlow, a math teacher in Wellesley, MA, and reprinted below.

The Bag-Stuffing Problem

Every time I come home from grocery shopping and unload all the groceries, I have a bunch of empty plastic bags to take to recycling. So I stuff them all into one of them. But there is more than one way to accomplish this. For example, if I had three bags, I could stuff one into a second one, then stuff that one into the third. Or, I could just stuff two of them into the third without either one being inside the other. So there are two ways I could stuff three bags.

How many ways could I stuff 10 bags?

Of course, you could find this problem and a posted solution online – but what’s the fun in that? So take out a pencil, and give this one a try yourself.

Submit your solution to Professor Paul Friedman (friedmap@union.edu, Bailey 107D) by noon on Oct. 8.