

## UNDERGRADUATE MATH SEMINAR

The next math seminar will be

**DATE:** **THURSDAY, April 20**

**Time &** **12:30 – Refreshments in Bailey 204**

**Location:** **12:50 – 1:45 Seminar in Bailey 207**



Professor Kimmo Rosenthal

In this seminar, Union College Professor of Mathematics, Emeritus, **Kimmo Rosenthal** will present the following talk:

### Title: 99 Variations on a Proof

**Abstract:** Can there really be 99 ways of viewing the solution of a simple cubic equation? Philip Ording thinks so in his engaging book with the above title. The text, with the mathematics leavened by the author's oftentimes wry commentary, cuts a broad swath through the history of cubics from a proof the Babylonians might have written to Gerolamo Cardano in 1564 discovering the cubic formula (yes, there is one), and even proof by origami. (Please do not expect a demonstration.) While much interesting mathematics arises, the book is as much about the writing of mathematics. What is the role of language, aesthetics, and "style" in mathematical writing? Is content the master, with form and language its lowly servants? The book is inspired by Raymond Queneau's *Exercises in Style*, which takes a simple one-page story and writes it in 99 different literary styles. This talk may be viewed as one of 99 variations on the undergraduate seminar.

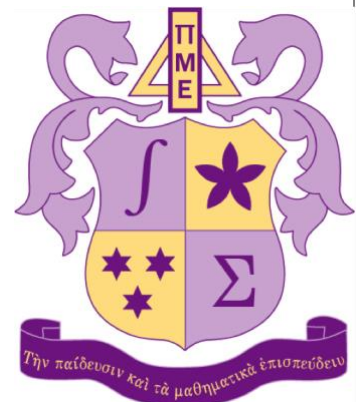
## Senior Writing and Pieces from Thesis

**Michael Nyikos** wrote his senior thesis as part of the Math Senior Writing Seminar, under the guidance of **Professor Brenda Johnson**

My name is Michael Nyikos and I'm a senior at Union College. During the winter trimester, I completed my Mathematics thesis on Computer Graphics. If I had to reflect on my experience constructing my thesis, I would say that, overall it wasn't as bad as I expected. Of course, like most things, the process required a considerable amount of work. This meant I had to read through different textbooks, search for reliable sources online as well as test out my knowledge of the material through the use of examples.

So what did I actually learn? My topic was Computer Graphics which is defined to be the field that studies the creation and manipulation of pictures with the aid of computers. My research focused primarily on examining how Linear Algebra is used to manipulate and create images. Specifically, in terms of manipulating images, I examined different linear transformations and determined how these can be used to move and stretch objects. In regard to the creation of images, I studied how matrices can correspond to pictures and how basic matrix arithmetic is able to blend and invert these images. Some of the more difficult aspects of the writing process included creating the images that corresponded to matrices as well as the meticulous process of performing computations on larger matrices and ensuring that all my calculations were accurate.

My advice for underclassmen who may be starting their thesis soon is to budget your time accordingly and make an effort to learn all the material. This will allow you to create your own examples and convey your work to your audience in a coherent manner.



**Math Honors Society, Pi Mu Epsilon,  
Application Deadline: Friday, April 21 at noon  
See posters in Bailey Hall for requirements**