

## UNDERGRADUATE MATHEMATICS SEMINAR

**Bookmark it!** The seminar schedule, abstracts, and (sometimes) slides presented by a speaker can be found <http://www.math.union.edu/activities/seminars/student/welcome.html>.

The next seminar of the winter term will be:

**DATE:** **TUESDAY, February 2nd**

**Time &** **3:45pm** – Refreshments in the Math Common Room, **Bailey 204**

**Location:** **4:00pm** – Seminar in **Bailey 201**

In this seminar, **Professor Alice M. Dean** from the Department of Mathematics and Computer Science at **Skidmore College** will deliver the following talk:

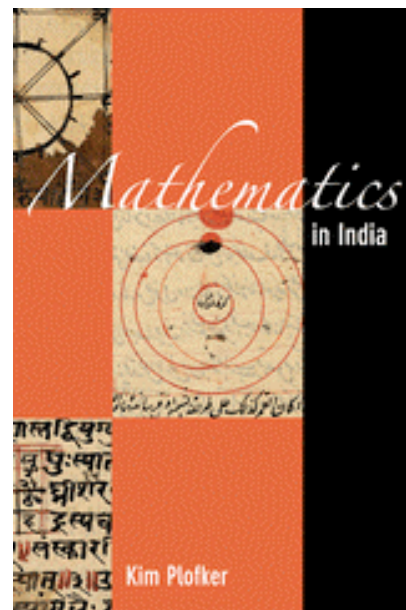
### Connect the Dots: Geometric Representations of Graphs

**ABSTRACT:** The internet, airline route maps, and digital circuits are all examples of systems that can be viewed as networks of nodes, some pairs of which are directly connected to each other in some way. The mathematical name for such a network is a *graph*, and a natural way to visualize graphs is to draw a dot for each node, and then draw lines or curves to represent the connections between pairs of nodes. However, if the graph is large and complex, such a drawing can become a tangled mess. The field of *graph drawing* has the goal of designing algorithms and alternative representations that produce simpler, more useful pictures of complex graphs. In this talk we look at several different ways to represent graphs visually, and we also discuss limitations on such representations.

## Professor Plofker To Give a Plenary Address at ICM 2010

**Professor Kim Plofker** is one of 20 individuals from around the world invited to be a plenary speaker at the International Congress of Mathematicians (ICM), to take place in Hyderabad, India, August 19-27. She joins speakers from Brazil, China, France, India, Israel, Russia and the U.S. The congress, held every four years, is organized under the auspices of the International Mathematical Union, a non-governmental, non-profit scientific organization dedicated to promoting international cooperation in mathematics and supporting activities that contribute to the development of pure, applied and educational mathematical science worldwide. It is, by almost all accounts, one of the most prestigious mathematics conferences in the world.

Professor Plofker is one of the world's leading experts in the history of Indian mathematics. A copy of her recently published book, *Mathematics in India* (Princeton University Press, 2009) is available in the Math Common Room (Bailey 204) for you to look through.



Congratulations, Kim, on this well-deserved honor!

## The Putnam Exam 2009

On December 5, 2009, four brave Union Students spent an entire Saturday of their winter recess challenging themselves to answer twelve difficult math problems on the infamous Putnam Exam. What follows is an account from one of the participants.

### *The Perks of the Putnam – by Erin Whitney ‘12*

When I first heard about the Putnam exam, I saw it as a sort of extra credit assignment. If you do well, you can share your score with possible future employers. If you don't do so well, you still get to see what the nation-wide recognized exam is all about. Either way, there are no negative consequences of taking this free exam; it is a purely beneficial opportunity that every student interested in mathematics should take advantage of.

The exam includes two three-hour periods, each consisting of six problems, with a lunch break in between. [We went to Pinhead Susans!] For the most part, the problems in each section go in order from least to most difficult. As pointed out to me by another student taking the exam, it is a good idea to focus on one or two problems that you think you can complete, rather than jumping around and doing a little on each problem. You can receive up to ten points on each problem, and it is not very easy to get partial credit. You may get one point if your work is heading in the right

direction, but it is better to try to complete a problem or two.

Although the exam is difficult, the problems are not impossible. Some preparation definitely helps. To prepare for the test, I attended weekly meetings with Professor Friedman and other students taking the exam. This was a way to go over some concepts that have appeared on the previous exams, and to simply practice. Not only does this type of preparation help for the Putnam exam, but it also helps with any math course in your future. I went over concepts that I have seen before in math classes, some that I am just beginning to see now, and some I have yet to see. The hour a week I put into this was definitely worthwhile!

I would strongly recommend that any person interested in mathematics give the Putnam exam a try. You do not need to go into it with any exam-like stresses. Just go in with an open mind and think of each problem as a puzzle. Give it a try and have fun!

### Problem of the Newsletter: January 29, 2010

Unfortunately, there were no correct solutions submitted to last week's problem. A solution to this problem, though, has been posted on the bulletin boards around Bailey Hall.

**This week's problem.** Inspired by Erin Whitney's article, let us take the first problem on this past year's Putnam Exam as this week's Problem of the Newsletter:

Let  $f$  be a real-valued function on the plane such that for every square  $ABCD$  in the plane,  $f(A) + f(B) + f(C) + f(D) = 0$ . Does it follow that  $f(P) = 0$  for all points  $P$  in the plane?

Professor Friedman will accept solutions to this problem until 12:00 noon Thursday, February 4<sup>th</sup>. Email your solution to him ([friedmap@union.edu](mailto:friedmap@union.edu)) or put it in his mailbox in the Math office in Bailey Hall.