

Math Mess

Department of Mathematics
St. Olaf College
Northfield, MN 55057

April 4, 2002
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This Week's Mathematics Colloquium

Title: A New Conjecture in Knot Theory

Speaker: Jill Dietz

Time: Thursday, April 4th, 2 pm

Place: SC 182

This Week's Colloquium

When you untangle your ski rope at the beginning of the summer, is the rope really knotted, or does it eventually untangle?

Knot theory is a branch of mathematics that addresses questions such as this in a theoretical manner. The most basic question in knot theory is "When are two knots the same/different?" A typical way of answering this question is by computing various invariants associated with knots.

Professor Dietz will introduce some knot invariants, then discuss a conjecture concerning the determinant of some pretzel knots.

Jill Dietz comes to us from St. Olaf College in Northfield, Minnesota. She likes to feed chocolate

to her students and colleagues, and often drinks coffee during office hours.

Career Column

Career of the Week: Agricultural Statistician

An agricultural statistician works with scientists to study the natural environment and food production by developing research plans, designing experiments, analyzing experimental data, and interpreting research findings.

Sample problems an agricultural statistician would investigate include: If one bean plant is more resistant to disease than another, is it due to luck or genetics? What will be the effects on water quality of changes in pesticide use? How can a network of sensors on the ground be used to collect data on sunlight amounts? Agricultural statisticians also collect data on crops and livestock and on farm

income and costs to aid farmers, agri-businesses, and state, federal, and foreign governments.

Many agricultural statisticians are employed by the National Agricultural Statistics Service (NASS) of the U. S. Department of Agriculture. For more information about this service, job opportunities, and summer internships, see www.usda.gov/nass.

Nth Annual Math Recital

The Nth Annual Math Recital is coming up in a few weeks and we know that all of you are getting really excited about it, so here are a few details to get you in the Math Recital mood:

Date: Wednesday, April 17th
 Time: 7:00pm until 8:30pm
 Location: Ytterboe Lounge
 Attraction: Student and Faculty talent. Good Food.

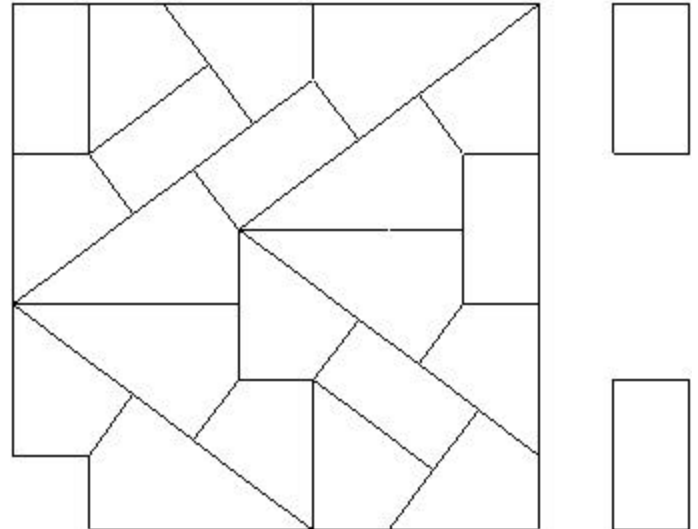
More Info: If you are interested in performing, please contact Steve McKelvey at x3421.

Last Week's Solution

Last week's problem: Prove the freaky Fibonacci formula $\pi/4 = \arctan(1/2) + \arctan(1/5) + \arctan(1/13) + \arctan(1/34) + \dots$, where the numbers in the denominators are alternate entries from the Fibonacci sequence.

Solution: Jason Saccomano had a solution. Understandably, it is a bit lengthy, but what makes it work is the fact that $\arctan(1/F_{2n}) = \arctan(1/F_{2n+1}) + \arctan(1/F_{2n+2})$ for all n . Summing both sides of this equation over $n=1,2,3,\dots$ and canceling out even-indexed terms yields the desired identity. (1 is F_2 , 2 is F_3 , and 3 is F_4 , so the hint was the above equation with $n=1$.)

Problem of the Week



Cut out these shapes and make a 7-by-7 square using 7 dominos, 10 small kites, and 5 large kites. (There are six in the picture; you only need five for this puzzle, so you can fly the 6th one.)

** Please submit all solutions to David Molnar (molnar@stolaf.edu) by noon Sunday.

If you would like to receive a copy of the Math Mess in your P.O. Box weekly, please e-mail Donna Brakke at brakke@stolaf.edu.

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