

# L'Augarithms



vol. 25.11 Visit us at <[augsborg.edu/home/math/forStudents.html](http://augsborg.edu/home/math/forStudents.html)> We're prettier in color.

April 18, 2012

## Mathematics Colloquium Spring Lineup

Colloquia are typically held Wednesdays 3:40—4:40 in Oren 113. Immensely appealing refreshments are served.

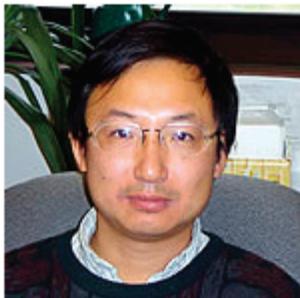
- Jan. 18 Chandra Erdman, '02, Ph.D., US Census Bureau
- Feb. 1 Ken Kaminsky, Augsburg College
- 15 Loren Larson, Northfield, Minnesota
- 22 Sadie Dietrich, University of Minnesota
- Mar. 7 Karen Saxe, Macalester College
- Apr. 4 Thomas Sibley, St. John's University
- 18 Danrun Huang, St. Cloud State University<sup>1</sup>

## <sup>1</sup>This week's speaker

### A small matrix with big information

Danrun Huang, St. Cloud State University

Abstract: I am a two-by-two matrix with small entries. Because I am simple in form but rich in content, you may find me in the introductions of many mathematical textbooks, from discrete mathematics to probability to dynamical systems, as a simple yet nontrivial example. You may even see me hanging around information theory or abstract algebra. In this talk, I will show you some fun applications of me in number theory and some footprints I left in dynamical systems. I am just a little matrix sitting on the mathematical gate; what am I?



Danrun Huang

Sweets and beverages will be offered.

*L'Augarithms*  
 The approximately bi-weekly newsletter  
 of the  
 Department of Mathematics  
 at Augsburg College  
 Editor.....Kenneth Kaminsky  
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## Problem of the week...

So far, no solvers to the POTW from the last issue, but as of this date, the newsletter has been distributed only on-campus. We will leave the POTW open.

One hundred ants are dropped on a meter stick. Each ant is traveling either to the left or the right with constant speed 1 meter per minute. When two ants meet, they bounce off each other and reverse direction. When an ant reaches an end of the stick, it falls off.

At some point all the ants will have fallen off. The time at which this happens will depend on the initial configuration of the ants.

Question: over ALL possible initial configurations, what is the longest amount of time that you would need to wait to guarantee that the stick has no more ants?

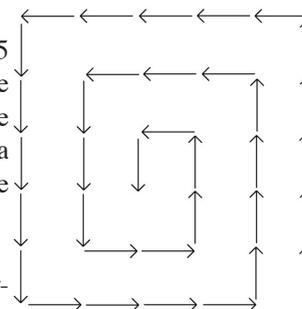
❖ Source: Su, Francis E., et al. "Ants on a Stick." Math Fun Facts. <<http://www.math.hmc.edu/funfacts>>.

## Puzzle of the week...

We have solvers (so far) from the PZOTW dealing with Egyptian fractions from the last issue. Co-solvers are **Keng Thao** and **Michael Hauge**, **Anika Clark**, as well as a reader with nomial de plume **Polly Nomial**. And now, this:

The spiral consists of 35 arrows. By changing the positions of four of these arrows, you can obtain a spiral expanding in the opposite direction.

Which are those four arrows?



❖ Submit POTW & POZTW solutions to [kaminsky@augsborg.edu](mailto:kaminsky@augsborg.edu), or under Ken's door at SCI 137E, or in the puzzles and problems box just outside of Su's office.



The whole gang

## The second Annual Math-Jeopardy Contest

On March 30th, the second annual math-jeopardy contest was again hosted by Augsburg College's Department of Mathematics.

Competing this year were teams from Concordia, Macalester, St. Thomas, and Augsburg, with Macalester and Augsburg finishing one-two.



Team MAC

Mac took an early lead and never looked back. However, the final score could have been much closer. Augsburg was the only team to answer the Final Jeopardy question correctly. The answer was "1 in 175,711,536." Augsburg came up with the correct question: "What is the chance of winning the Mega Millions Lottery?" (Incidentally, "What is the chance of winning the Powerball Lottery?" would have been incorrect. The chance of *that* is 1 in 175,223,510.) If Augsburg had bet its entire wad of points, it would have left Mac with a one-point win, because Mac knew how to protect its large lead.



Team AUGSBURG

Team **Augsburg** enjoyed the collaboration of Jeremy Anthony, Priti Bhowmik, Promise Okeke, Emma Winegar in Round 1, and Carl Benson, Brianna Blake, Megan Sutherland, Jasmine Zand in Round 2.



Team ST. THOMAS

Unbounded Augsburg Math Club Key Organizers include Jeremy Anthony, Carl Benson, and Austin Wagner.

Playing for **Concordia** were Andrew Lor, Mohamed Khalif, Kali Moyer, Sam Lee in Round 1, and Joe Widman, Brian Bothwell, Kelsey Koch, Ted Thuening in Round 2. Faculty Sponsor: Sarah Jahn.



Team CONCORDIA

Team **St. Thomas** consisted of Linh Duong, Maria Fischer, Chris Ang, Chris Hellmann, Karly Harrod, Alex Schulte, and Sarah Millholland.

The names of the Macalester team members were unavailable at press time.

The scores of the 1-2 finishers were MAC: 3001, and Augsburg: 2201.