

Colloquium Series Dates for Spring, 2003

Colloquia are held on Wednesdays from 3:40 to 4:40 p.m. in Science 108. Here is the tentative schedule for 2002-2003:

Wed. Feb. 12	David Molnar, St. Olaf College
Wed. Feb. 26	Tracy Bibelnicks, Augsburg College
Wed. Mar. 12	Laura Chihara, Carleton College
Wed. Mar. 26	Nick Coult, Matt Haines, & Ken Kaminsky, Augsburg College
Wed. Apr. 9	Augsburg Students
Wed. Apr. 16	Augsburg Students

This week's talk: To Infinity... and Beyond!



David & daughter Ava

by David Molnar, St. Olaf College

We normally think of there being just one infinity. For example, when we speak of a limit as n goes to infinity, there is no need to say which infinity n is going to. There are areas of mathematics in which a further distinction needs to be made. The purpose of this talk is to introduce you to the *ordinal numbers*, which include many funky varieties of infinity. On the way, you will learn some strategies which may help you win the game of Hackenbush.

Puzzle of the week (3-D)

Last week's 3-D puzzle was solved by Regina Hopingardner of the CLASS Office. She found the order, farthest to nearest to be 5, 4, 1, 2, & 3. Below is another 3-D puzzle. Your job is to find its hidden message by tricking your eyes into bringing the two images to one. The hidden message should then stand out.

3D Puzzle
3D Puzzle

3D Puzzle
3D Puzzle

Mathematicians and other scientists often gather at parties to discuss their disciplines. Short or tall, male or female, people of science always like to stand around and talk shop. Regardless of how it turns out, they invariably remain friends. Never a rowdy crowd, they just like a good argument from time to time. **Kaminsky 2003**

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Puzzle & Problem...

PUZZLE SECTION:

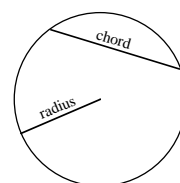
Last week's puzzle was solved by Augsburg students **Patrick Martell** and **Hung Nguyen**. This week's puzzle is limited to the 3-D puzzle on this page.

PROBLEM SECTION:

There have not been any solvers to last week's "Creamer Game" problem. But, we can wait.

Here is this week's problem:

If a chord (see the Figure) is selected at random* on a fixed circle, what is the probability that its length, l , exceeds the radius, r , of the circle?



*Take 'at random' to mean that the end-points of the chord are uniformly distributed on the circle.

Send your solutions to the editor at kaminsky@augsborg.edu, or drop them in the P & P box just inside the math suite, SCI 137.

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Augarithms

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From *Dictionary of Theories**

Feigenbaum's period-doubling cascade: Named after its discoverer, American physicist Mitchell Jay Feigenbaum (1944-), this is a theory about the onset of chaos.

It hypothesizes that when the forces acting on a physical dynamical system are changed, a periodic orbit is often replaced by another one close to it which makes two turns before returning to its starting point. This action is repeated resulting in periodic orbits of periods 2, 8, 16, 32, ... times as long as the original. The places where the period doublings occur have successive ratios which are approximately equal to FEIGENBAUM'S CONSTANT (See below). The Feigenbaum cascade has been observed in hydrodynamic turbulence experiments.

Feigenbaum's constant: Feigenbaum discovered the constant numerically. Oscar Lanford later supplied a computer-assisted proof.

A constant equal to approximately 4.6692016 occurring in the iteration of many one-dimensional maps. Systems in which the constant appears include the logistic map and the Hénon map.

Reference: I. Peterson, *The Mathematical Tourist* (New York, 1988)

Martha Limber

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Mathematician Biography--William Feller



William Feller

Born July 7, 1906 in Zagreb, Croatia, William Feller was educated by private tutors and had no secondary schooling. He entered the University of Zagreb and was awarded his first degree in 1925. His Ph.D. was awarded by the University of Göttingen in 1926. He spent two more years at Göttingen before accepting an appointment from the University of Kiel where he worked until 1933.

Because of his Jewish background, Hitler's policies forced Feller out of Germany in 1933. He went to Copenhagen until 1934, then he moved to the University of Stockholm where he joined the probability group. He moved to the USA in 1939 becoming professor of mathematics at Brown University.

The Nazis had taken over the German mathematical reviewing journal and there was a need for another such journal to be set up out of their control. Feller became the first executive editor of *Mathematical Reviews* which was set up at this time.

In 1945 Feller accepted a professorship at Cornell university, where he was to work for five years until being appointed Eugene Professor of Mathematics at Princeton in 1950.

In addition to significant research in probability theory, Feller's most important work was *Introduction to Probability Theory and its Applications* (1950-61), a two volume work which he frequently revised and improved with new approaches, new examples and new applications.

Joseph Doob wrote the following tribute to Feller:

Those who knew him personally remember Feller best for his gusto, the pleasure with which he met life, and the excitement with which he drew on his endless fund of anecdotes about life and its absurdities, particularly the absurdities involving mathematics and mathematicians. To listen to him lecture was a unique experience, for no one else could lecture with such intense excitement.

Feller received many honours. He was president of the Institute of Mathematical statistics and he was a member of the Royal Statistical Society in the UK. He was awarded the 1969 National Medal for Science but died before the presentation. His wife received the medal on his behalf.

William Feller died January 14, 1970 in New York.

Article by J J O'Connor and E F Robertson, reprinted with permission

Cartoon Corner

