Augarithms

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Mathematics Colloquium Fall Lineup

Colloquia are typically held Wednesdays from 3:40—4:40 in Science Hall 108. Refreshments are always provided.

Sep.	13	The Augsburg Mathematics Department presents itself.
Sep.	27	Huseyin Coskun, Augsburg College & School of Mathematics, University of Minnesota
Oct.	11	Amelia Taylor, Colorado College
Oct.	18	Loren Larson, St. Olaf College[1]
Oct. →	25	Matt Haines & Ken Kaminsky, Augsburg College[2]
Nov.	8	TBA
Nov	29	Richard Jarvinen, Winona State University & NASA

[1]Last week's speaker, Wendy Weber, had to cancel due to illness. She was replaced by Loren Larson, Professor Emeritus, St. Olaf College. Prof. Larson spoke on Knight Tours using Euler's Method. The 300th birthday of Leonhard Euler (actually coming next April 15th) was duly celebrated with a birthday cake.

[2]This week's speakers

...are Matt Haines (↲) and Ken Kaminsky (→). They will speak about their summer scholarly activities, both partially supported by grants from the Center for Teaching and Learning.

A Geometric Approach to Voting Theory
by Matt Haines

Voting with your friends to decide what movie to see? You can guarantee that your choice is the choice of the group! How? By carefully selecting the voting system. A brief introduction to voting systems will lead to a geometric approach to analyzing elections.

b) *Why is it so hard for elves to get health insurance?*
by Ken Kaminsky

It is well-known that elves are not susceptible to the diseases of other races. I will discuss some of the probabilistic and statistical implications of this fact.

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The bi-weekly newsletter of the
Department of Mathematics at Augsburg College

Editor-in-chief.....Ken Kaminsky
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Problem of the week...[3]

We received correct solutions to the problme of vol. 20.3 from **Michael Janas**, **Evan Fuhs**, **Britta Boyum**, and **Richard Garnett**. The answer is 6210001000. Here is week's problem:

> During each hour of the day there is a time when the minute hand and the hour hand of the clock coincide. When does this happen between 3:00 and 4:00?

Submit your solution to the editor at kaminsky@augsburg.edu, slip them under his door at Science Hall 137E, or put it in the puzzles and problems box just outside of Su's office.

[3]reprinted with permission from Bradley University's 'potw' page <bradley. bradley.edu/~delgado/>

Puzzle of the week...

We received several correct solutions to the puzzle of vol. 20.3. The solvers were **Britta Boyum**, **Michael Janas**, **Evan Fuhs**, **Brent Kaczmarski**, and **Diane Glorvigen**. There two submitters who divided the figure into four equal pieces but not of the same shape as the original. Here is this week's puzzle:

> Coming from opposite directions, a freight train and a passenger train pass each other on parallel tracks. The passenger train travels at 60 mph; the freight train at 30 mph. A passenger observes that it takes 6 seconds to pass the freight train. How long (in feet) is the freight train?

Submit your solution to the editor at kaminsky@augsburg.edu, slip them under his door at Science Hall 137E, or put it in the puzzles and problems box just outside of Su's office.

Obituary

Paul R. Halmos

by Jeremy Pearce
New York Times

Paul R. Halmos, a mathematician known for exploring the implications of probability theory and helping simplify the expression of mathematical concepts in writing and speech, died on Oct. 2 in San Jose, Calif. He was 90.

The cause was pneumonia, said a spokesman for Santa Clara University in California, where Dr. Halmos taught from 1985 to 1995.

Dr. Halmos, whose work included algebraic logic, measure theory and naïve set theory, once described mathematics as "almost like being in touch with God."

"God is keeping secrets from us," he continued, "and it's fun to try to learn some of the secrets."

Dr. Halmos worked on probability theory, the study of randomness under differing conditions, and contributed to the field of operator theory, a branch of higher analysis related to calculus.

In synthesizing concepts within operator theory, he "made the theory more coherent and a vibrant area of research," said John H. Ewing, a mathematician and the executive director of the American Mathematical Society. With F. W. Gehring, Dr. Ewing edited a review of Dr. Halmos's work, "Paul Halmos: Celebrating 50 Years of Mathematics" (1991).

Whether speaking about probability theory or ergodic theory, which is connected to chaos theory and concerned with changes to systems over time, Dr. Halmos was recognized for his ability to express complex ideas concisely. In the 50's, he helped simplify written mathematics and became an early advocate for using the tombstone symbol to signify the end of a proof. The symbol, now sometimes called a halmos, acts as a punctuation mark.

Paul Richard Halmos was born in Budapest. He earned an undergraduate degree and a doctorate from the University of Illinois, where he wrote a dissertation on theories behind gambling systems in 1938.

In 1950, he published "Measure Theory" on measuring volume, length and area in general spaces, that Dr. Ewing said "remains an outstanding work on the subject." Dr. Halmos also wrote "Algebraic Logic" (1962), "A Hilbert Space Problem Book" (1967) and an autobiography, "I Want to Be a Mathematician" (1985).

He taught at the University of Chicago, the University of Michigan, Syracuse University, Indiana University and the University of Hawaii before joining Santa Clara. In the 80's, Dr. Halmos was editor of The American Mathematical Monthly.

Surviving is his wife of 61 years, Virginia, of Los Gatos, Calif.

Leonhard Euler

In honor of Leonhard Euler's 300th birth-year, we will mention here one of the many significant things he is known for. More Euler to come.

Euler's constant is a real number, which, to 30 decimal places is

$$\gamma \approx 0.57721566490153286060651209008 2.$$

Its definition is the limit

$$\gamma = \lim_{n\to\infty}(1+1/2 + 1/3 + ... + 1/n - \ln n)$$

where ln n is the natural logarithm of n. Euler's constant arises in many contexts. Some interesting facts about it are that

a) It is unknown whether γ is algebraic or transcendental.
b) It is unknown whether γ is rational or irrational.

If you can establish the truth of either of these facts, you will be very famous.

Haines & Kaminsky 2006

Professor Fogelfroe shows off his proof that there exist infinitely many identical twin primes.