Augarithms

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The new fall line of colloquia is revealed...

Mathematics Colloquium Series

Unless otherwise indicated, colloquia are held Wednesdays from 3:40 - 4:40 in Science Hall 108. Refreshments are provided.

Jan.	25	Fermat's Last Theorem, The NOVA special
Feb.	8	Terrance Hurley, University of Minnesota
Mar.	**→ 15**	**Cindy Kaus, Metro State University**
	29	TBA
Apr.	5	TBA
	26	Missy Larson & Dan Wolf, Augsburg College

This week's speaker...

Differential Forms: What are they and how can we apply them in physics?

Cindy Kaus,
Metro State University

Cindy Kaus

Differential forms are important concepts in mathematics but their nature is not at all intuitive. In contrast, the ideas of vectors and vector fields can be grasped somewhat easily. So, why would we want to use differential forms in applications to physics? The purpose of this talk will be to introduce differential forms and their applications to physics. We will have a new way to look at some old familiar theorems from calculus and see how the language of differential forms can be applied to classical physics.

Problem of the week...

We received no solutions to the POTW from volume 19.8. The ladder is sitting

$$1+\sqrt{\frac{49}{2}+7\sqrt{\frac{53}{4}-5\sqrt{2}}-5\sqrt{2}}$$

feet up the wall. Here is this week's POTW:

Pick 2006 points at random in the plane. Suppose no three of them lie on a line (which would be true with probability one if they were chosen truly at random). Is there always a line in the plane which divides the set of points into two equal parts?[1]

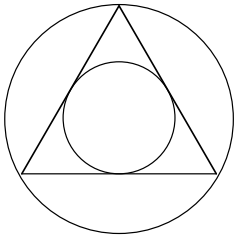
Submit your solution to the editor at kaminsky@augsburg.edu, put them in the puzzles and problems box just outside of Su's office, or slip them under his door at Science Hall 137E.

[1]reproduced (and adapted) with permission from Bradley University's 'potw' page <bradley.bradley.edu/~delgado/>

Puzzle of the week...

Solvers of the 5+5+5=500 puzzle of the previous issue were **Hang Pham**, **Erik Bentley**, **Richard Garnett**, and **Billy Helm**. And here is this week's puzzle:

In the figure below, an equilateral triangle has been wedged in between two circles. How does the diameter of the smaller circle compare to the diameter of the larger circle?



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

Do you love Pi(e)

We do and *Unbounded*, the Augsburg College math club, would like to invite you to celebrate Pi day with us on Tuesday, March 14 from 12:00 to 2:45. We will be reading digits of pi, serving pie, and having a pie-in-the-face contest. All while raising money for hurricane relief. If you are interested in celebrating this terrific number with us and would like to read digits of pi for 5 minute periods, please email spargo@augsburg.edu. Join us in our party of the most delicious number ever.

Augarithms

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

Editor.....Ken Kaminsky
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Born on this day—Boris Nikolaevich Delone[2]

Boris Delone

Boris Delone graduated from Kiev University in 1913. At Kiev he was a student of Grave, whose work in algebra and number theory he followed. After graduating Delone taught in Kiev where he was a member of the Mathematical Society which had among its members Ch. T. Bialobzeski, P. V. Voronets, N. B. Delone, D. A .Grave, A .A. Friedmann, A .P. Kotelnikov, V. P. Linnik and O. Yu. Schmidt.

Following the Revolution of 1917 there was a change in policy towards education which, certainly in the Ukraine, had to become more technology based and more practical. Algebra certainly did not fit into this new educational philosophy and Grave's algebra seminar was forced to close. Some mathematicians, such as Grave himself, changed to study applied mathematical topics. Delone, however, chose to continue to study algebra and so was forced, in the 1920s, to leave the Ukraine.

Delone moved to Petrograd in 1922. Petrograd was the name that St Petersburg had been given in 1914 and, two years after he began working there, in 1924, it was again renamed, this time to Leningrad. Delone worked at Leningrad University from 1922 until 1935.

The Institute of Physics and Mathematics had been established by Steklov in Petrograd (as it was called at the time) in 1921. In 1932 the Institute of Physics and Mathematics was divided into two independent Departments, the Mathematics Department headed by Vinogradov and the Physics Department headed by Vavilov. Vinogradov invited some outstanding mathematicians to join the new Mathematics Department including Delone.

In this new Mathematics Department, Delone became a colleague of Sergei Bernstein, Luzin, Smirnov, Kuzmin, N S Koshlyakov, Kochin, Sobolev and Faddeev.

The St Petersburg Mathematical Society was founded in 1890 but disbanded at the time of the 1917 Revolution. However the Society was reformed in 1921 as the Petrograd Physical and Mathematical Society and Delone joined in the following year. He played an active role in the Society along with other outstanding mathematicians such as Ya V Uspenskii, V I Smirnov, V A Steklov, A A Friedmann, V. A. Fok, A. S. Besicovitch, Sergei Bernstein, Ya. D. Tamarkin, R. O. Kuzmin and B. G. Galerkin.

In 1934 the Division of Mathematical and Natural Sciences of the USSR Academy of Sciences decided to split the Departments of the Steklov Institute of Physics and Mathematics into independent Institutes, the Steklov Mathematical Institute and the Lebedev Physical Institute. Delone became the Head of the Algebra Department of the Steklov Mathematical Institute. However, the Steklov Mathematical Institute moved to Moscow and, in 1935 Delone moved to Moscow. He was professor of mathematics at the University of Moscow from 1935 to 1942.

The mathematical topics that Delone studied include algebra, the geometry of numbers. He also did important work on the structural analysis of crystals.

In addition to his fame as a mathematician, Delone was a famous rock climber. He died in 1980.

[2]Reprinted with permission from J J O'Connor and E F Robertson

Not So Distant Neighbors: U.S. & Mexico Today

This is not an ad for a cheap spring break trip to the beach, but rather an alert about a great short-term travel opportunity for Augsburg students. The trip is titled "Not So Distant Neighbors: U.S. & Mexico Today" and is sponsored by Augsburg's Center for Global Education (CGE) and Center for Teaching and Learning (CTL). With support from CTL and CGE, three students will be able to partake in this August 5-13, 2006, trip to Mexico for a cost of $250. For more information, stop by the Center for Global Education or see brochure on Professor Dupont's door (Science 137). Professor Dupont joined a previous CGE trip to Guatemala, so feel free to talk to her to learn more about CGE trips. Note that current seniors are not eligible, and the deadline for applying is March 31, 2006. This trip does satisfy the Augsburg Experience requirement!