St. Olaf Mathematics Department

Math Mess

Department of Mathematics
St. Olaf College
Northfield, MN 55057

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This Week's Colloquium

Sadly, there will be no colloquium this week! Fill the void by sharing math with someone you love. ☺

CONGRATULATIONS!!

We extend a huge Congratulations to Professor Jill Dietz who found out Monday that she was awarded tenure and promotion to Associate Professor of Mathematics!! Congratulations!

Career Column

Career of the Week: Actuary

(Each week this semester, we will describe a career that uses mathematics)

An actuary evaluates the financial implications of uncertain future events. For example, actuaries determine how much a homeowner should pay for insurance or how much money a life insurance company should set aside to pay its anticipated claims in a given year. Actuaries are employed by companies that deal with insurance, employee benefits, and pensions. Their work involves mathematics, business issues and trends, law, and economics.

To be a fully accredited actuary, one must pass a series of eight exams. The first one covers calculus and probability and can be taken while you are at Saint Olaf. The next exam will be given on May 22, 2002. (Having one exam completed makes you more attractive to potential employers.)

Check out the website www.beanactuary.org for information on the exam system, preparation for an actuarial career, job listings, and the high job satisfaction reported by actuaries.

REUs

Wondering what to do this summer? Consider learning and doing mathematics, and getting paid (pretty well) for doing it.

The National Science Foundation supports a whole slew of Research Experiences for Undergraduates (REU) summer programs designed for people just like you.

To be eligible you must be a US citizen or permanent resident, and must be enrolled in a bachelor's degree program in BOTH Spring and Fall of 2002. (Graduated seniors are NOT eligible.)

For much more information, go to www.nsf.gov/home/crssprgm/reu/reudms1.htm

Deadlines are approaching VERY SOON, so go talk to your favorite math professor ASAP.

N^{th} Annual Math Recital

Well, it's time to start tuning up for the infamous N^{th} Annual Math Recital! Turn the page for more details:

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.

Konhauser Results

The 10th Annual Konhauser Problemfest was held this past Saturday at St. Thomas. 22 teams from 5 colleges participated, including 4 from St. Olaf. The team of Jason Grimm, Erik P. Johnson, and Michael Zahniser finished fourth overall, a fine showing; the pizza trophy remains somewhere in Northfield. Congratulations and thanks to all those who participated.

Get out your calendars – next year's contest will be at St. Olaf, on February 22, 2003, and take note: **there will be donuts!** But don't wait that long – Stop by this Wed night (SC182, 7pm) to discuss problems from this year's contest with the problem guy (donuts provided!).

Last Week's Solution

Last week's problem: The triangular numbers: 1, 3, 6, 10, are those which can be depicted by a triangular array of dots, each row having one more dot than the row above it. The question is, which triangular numbers are also perfect squares? Are there infinitely many?

Solution: Yah, you betcha there are infinitely many solutions. **Jerad Parish** found the first three - 1, 36, and 1225 - and **Matt Bills** and **Gretchen Riewe** found the first seven (!), which is almost infinitely many. Jerad discovered that m^2 is also a triangular number whenever $8m^2+1$ is a perfect square. In fact, if $8m^2+1=k^2$ (*), then m^2 is the triangular number 1+2+...+n, where k=2n+1. m=1, k=3 is the first solution to (*).

Note that in subsequent solutions, k/m will get successively closer to $\sqrt{8}$. We can find more solutions by putting k/m=3/1 into the "Babylonian Square Root Thingie": $x_{new}= ½\ (x_{old}+8/x_{old})$. Feeding in 3/1, this spits out 17/6; feeding in 17/6, it spits out 577/204, which yield the triangular-square numbers $6^2=36$ and $204^2=41616$ respectively. By this process, every denominator squared will be a triangular-square number, but we'll miss some. To find out how to find the ones we missed, and how to get an actual formula which generates all triangular-square numbers, you're going to have to subscribe to the math-probsolv email list.

Problem of the Week

Something different this week, brought to us by Paul Zorn and Barry Cipra.

In a recent newspaper column, Molly Ivins wrote as follows:

> ... The wealth of the Forbes 400 richest Americans grew an average $1.44 billion each from 1997-2000, for an average daily increase of wealth of $1,920,000 per person. That's 6,602 times the U.S. minimum wage.

At first glance, these numbers seem fishy. For instance, dividing $1.44 billion by 1095 (the number of days in 3 years) gives about $1,315,000 per day, not $1,920,000. But (fairly) good sense *can* be made of all these numbers if we interpret things correctly and if we correct one tiny mathematical/typographical error (it involves a missing digit).
Make sense of the numbers.

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