

Math



Mess

Department of Mathematics
St. Olaf College
Northfield, MN 55057

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This Week's Mathematics Colloquium

Title: Engineering Direction at Silicon Graphics

Speaker: Gabriel Broner

Time: Tuesday, October 29th, 1:30 pm

Place: SC 182

This Week's Colloquium

Silicon Graphics focuses on developing products that uniquely solve the needs of engineers, scientists, and other creative and technical users. Mr. Broner will look at the challenges users face and the engineering and product directions chosen to address these challenges.

Gabriel Broner is Vice President of Engineering, Software and Storage Division, at Silicon Graphics (SGI) and has 20 years of experience in the computing industry, including 11 with Cray Research and Silicon Graphics in Minnesota. As an operating systems architect, Mr. Broner worked on the design and implementation of the operating systems for Cray's massively parallel machines. Since then, he has held a series of technical and management jobs at Cray Research and Silicon Graphics.

To Be or Not to Be?

That is the question which will be answered on Tuesday, November 5th in the Science Center Lobby. If you're curious about which math course to take next semester or toying with the idea of majoring in math or wondering what you can do with your math-major, then this is the event for you. Of course, you can also come just for the food: pizza and subs at 4:30 before the info-session at 5:00 followed by root beer floats at the end!

Practicum Interviews

Interviews for the 2003 Practicum class, taught by Professors Legler and Vessey, will take place the second week of November. A total of 15 students will be enrolled and will form 3 "teams" to work on problems submitted by corporations, governmental agencies, and non-profits. Questions should be addressed to either of the instructors. More information will be available at the "To be or not to be" colloquium and in next week's Math Mess.

Upcoming Contests

The MAA North Central Section holds its annual team competition this year on Saturday, November 16. This is a three-hour contest, with ten problems, mostly based on nothing more than Calc II. 60 or so teams of up to three people from schools in MN, SD, ND, and parts of Canada participate. We take the contest here, and there is no limit to the number of teams who can participate. If you are interested, contact David Molnar, with names of teammates, if appropriate. A practice session will take place Thursday, Nov. 7, 7:30pm in SC130. Copies of old exams and bananas will be available.

Steven Smale to Speak

Steven Smale is giving a series of talks at Gustavus in the upcoming two weeks. In 1966 Smale won the Fields Medal (the most prestigious prize in mathematics) and has made significant contributions in the fields of dynamical systems, geometry, econometrics, operational research, topology and the mathematical theory of computer science. There are two talks for students: Wednesday, October 30, 7:30PM, Olin 103—"Creativity and its Obstructions"; and Wednesday, November 6, 7:30PM, Olin 103—"What is Chaos, the new science of unpredictability?" Rides for these events will be leaving St. Olaf at 6:15 pm on each of these days. If you are interested in attending one or both of the talks please email hamiltod@stolaf.edu and we will make sure that you have a ride.

Last Week's Problem

Before attending to the problem from October 14th, we must recognize a few unsung heroes who solved the October 7th problem involving the three bricks. Casey Rutherford '04, Michael Zahniser '04, Bob Hanson, Nick Larson '05, Jason Saccomano '05, Adam McDougall '05 all found the diagonal of the brick without using any formulas.

Now for Last Week's Problem: What is the volume of the smallest cone that fits over and entirely obscures a grapefruit with radius 1?

The smallest possible cone has a volume of $\frac{8p}{3}$, or exactly twice the volume of the grapefruit. Adam McDougall '05 was the only solver. The volume of a cone is $\frac{1}{3}\pi r^2 h$. A relation between r and h can

be found by looking at a cross-section of the cone and grapefruit, which is an isosceles triangle with a circle inside it. Cutting the triangle in half and applying the Pythagorean Theorem (twice), we get $r^2 + h^2 = (\sqrt{h^2 - 2h} + r)^2$, from which we can

find the function $V(h) = \frac{1}{3}\pi h^3$. $V'(h) = 0$ when $h = 4$, so the minimum volume is

$$V(4) = \frac{8p}{3}.$$

Problem of the Week

This week's problem is from the 1998 NCS team competition. Let $f(x)$ be a polynomial of degree 2 and $g(x)$ a polynomial of degree 3 such that $f(x)=g(x)$ at some three distinct equally spaced points, a , $(a+b)/2$, and b . Prove

$$\int_a^b f(x)dx = \int_a^b g(x)dx.$$

** 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.

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