
TCU Math News Letter

Volume 10, Number 5 March 2002

Music is the pleasure the human soul experiences from counting without being aware of counting.

--- Gottfried Leibniz

[Editor: Dr. Rhonda Hatcher](#) and [Archive of Newsletters](#)

TCU Physics and Mathematics Departments Lectureship Talk on March 19

Professor Victoria Rayskin of the University of California, Los Angeles will present the talk "Homoclinic Intersections in Chaotic Systems" on Tuesday, March 19, 2002. The talk will begin at 4 p.m. in Winton Scott Hall 145, and refreshments will be served in Winton Scott Hall 171 at 3:30 p.m. before the talk.

Senior Honors Presentation

Amanda Knecht, a senior mathematics major, will be among the eight TCU seniors presenting Honors Projects during Honors Week. Amanda will present her project, "Investigating the Riemann Zeta Function" at 3:55 p.m. on Tuesday, April 2, 2002. The presentation will be in Lecture Hall 3 of the Sid W. Richardson Building.

Problem Solving Seminar

Professor George Gilbert plans to run a problem solving seminar next fall, provided that at least three students are interested. If you are interested in problem solving, you can participate either as a one-hour, Math 40970, Special Topics, course (section 707, permission of instructor required) or informally (no credit, free). The emphasis will be on gaining experience with contest-type problems and on writing clear, complete solutions. Both aspects will be of benefit to you in upper level mathematics courses. Please contact Professor Gilbert (g.gilbert@tcu.edu, Winton Scott 141, 257-6061) right away if you might be interested. This is highly recommended for those who would like to take the Putnam mathematics contest in December. To read a more detailed description of the seminar, see <http://www.math.tcu.edu/math/faculty/gilbert/40970/40970Desc.html>.

Calculus Bee on April 9

The TCU Mathematics Department Calculus Bee will be held on Thursday, April 9 beginning at 4:00 p.m. in Winton Scott Hall 145. There will be refreshments for all of the contestants in Winton Scott Hall 171 from 3:30 to 4:00 p.m.

All TCU undergraduates are eligible to compete. A cash prize of \$75 will be awarded to the first place finisher, \$50 will go to the second place finisher, and the third place finisher will be awarded \$25.

Last year, the first place winner in the Calculus Bee was Anantheswar Chennareddy. The second and third place winners were Matthew Kolman and Michael Carletti, respectively.

Students interested in competing in the Calculus Bee should sign up in the Mathematics Department Office in Winton Scott Hall 112.

Upcoming Parabola Events

There are three Parabola meetings planned for the month of April. On Friday, April 19, Parabola will host a movie party from 3:00 to 5:00 p.m. On April, 23, undergraduate mathematics major Charlie Bingham will be presenting his senior honors project in a Parabola talk, and Amanda Knecht will present hers on a date yet to be determined. Look for more details on these events in the April newsletter.

Solution to the February 2002 Problem of the Month

Problem: Professor Chatty has extended office hours every weekday. Four students sign up for meetings by randomly (and independently) choosing a day to meet with her. Compute the probability that there are two days with two students signed up on each of those days. (Suggested by David Addis.)

Solution:

Solution #1: There are $5^4 = 625$ ways to assign days to the four students. Those satisfying the conditions may be constructed and counted by choosing two days in one of ${}_5C_2 = 10$ ways and then by choosing two students for one of these days in one of ${}_4C_2 = 6$ ways. Thus, the probability is $10 \cdot 6 / 625 = 12 / 125$.

Solution #2: The probability that the second student to sign up selects the same day as the first and that the remaining two students sign up in a way that satisfies the conditions of the problem is $\frac{1}{5} \cdot \frac{4}{5} \cdot \frac{1}{5} = \frac{4}{125}$. The probability that the second student to sign up selects a different day from the first and that the remaining two students sign up in a way that satisfies the conditions of the problem is $\frac{4}{5} \cdot \frac{2}{5} \cdot \frac{1}{5} = \frac{8}{125}$. Adding the probabilities for these (mutually exclusive) events yields the probability $12 / 125$.

Problem of the Month

This month's problem is a variant of a problem originally suggested by Bob Ferguson. Find the minimum value of $x^x y^y$ where x and y are positive numbers whose sum is 2002.

(Remember that math majors will earn 10 points in the Bucks for Books lottery for a correct solution. For details and other ways to earn points, refer to the September 2000 Newsletter or visit the web page www.math.tcu.edu/math/BucksForBooks.html)

Students and others are invited to submit solutions to Dr. George Gilbert (Math Dept. Office or P.O. 298900). Correct solutions submitted by persons who are not members of the TCU math faculty will be acknowledged in the next issue of the newsletter. Note that a correct solution is an answer and a justification of its correctness. The solution to the problem will be published in the next edition of the newsletter.

The TCU Math Newsletter will be published each month during the academic year. Dr. Hatcher: Editor; Dr. Gilbert: Problem Editor; Dr. Doran: Thought of the Month Editor. Items which you would like to have included should be sent to Dr. Hatcher (Math Dept. Office or P.O. 298900).