TCU Math News Letter

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My mind rebels at stagnation. Give me problems, give me work, give me the most abstruse cryptogram, or the most intricate analysis, and I am in my own proper atmosphere.

- Sherlock Holmes
from The Sign of Four

Editor: Dr. Rhonda Hatcher and Archive of Newsletters

Math Department Party on Tuesday, December 12

The TCU Mathematics Department invites all TCU mathematics faculty, staff, students, and friends to come to the our annual holiday party. The party will be from 11:00 a.m. to 1:00 p.m. on Tuesday, December 12 in Winton Scott Hall 171. As usual, a wonderful lunch will be served. If you would like to to bring a food item, please sign up in the Mathematics Department office. Students who would rather not cook, can just make a one dollar donation toward buying the turkey. We hope you are able to join us.

TCU Mathematics Department Web Site is Established

The next time you "surf the internet" you may want to check out the new TCU Mathematics Department web site. TCU Mathematics professor, Dr. David Addis, recently got the site up and running. To find the site from any web browser, use the URL (universal resource locator)

http://www.math.tcu.edu/math/mathhome.html

At the TCU Math Department web site you will find, among other things, e-mail addresses for faculty, a Parabola Club page, course descriptions, the TCU Research Lectureship Schedule, and descriptions of other activities of the department.

Two TCU Research Lectureship Talks in January 1996

The TCU Research Lectureship Schedule will start off the new year with two speakers in January.

The first speaker will be Professor Ara Basmajian of the University of Oklahoma. He will present his talk, "An Introduction to Hyperbolic Geometry," on Tuesday, January 23 at 4 p.m.

Professor Dan Levine of the University of Texas at Arlington will be the second speaker in January. He will present a talk entitled "Neural Network Modeling of Primate Decision Rules" at 4 p.m. on Tuesday, January 30.

Both of the talks will be presented in Winton Scott Hall 145, and refreshments will be served in Winton Scott Hall 171 during the half hour preceding the talks.

Dr. Ronald Graham to be a Visiting Green Honors Chair in Spring 1996

The TCU Mathematics Department is very pleased to announce that Dr. Ronald Graham will be a Visiting Green Honors Professor during the week of March 3-6, 1996.

Dr. Graham is a very well known and distinguished mathematician. He is a member of the National Academy of Sciences and is a past president of the American Mathematical Society.

Details of Dr. Graham's visit will be announced in the next newsletter.

TCU to Host an NSF-CBMS Regional Conference in 1996

Professor Goro Shimura of Princeton University, one of the world's best number theorists, will be the featured speaker at an NSF-CBMS Conference at TCU on May 20- 24, 1996.

Professors Robert Doran, Ze-Li Dou, and George Gilbert were awarded a National Science Foundation Grant to fund the conference. The conference will feature not only Professor Shimura, but also many other prominent mathematicians.

Solution to the November 1995 Problem of the Month

Consider the following idealized version of the ring toss at the State Fair. Rings of (inside) radius are tossed onto a large surface with many cylindrical pegs of (outside) radius r, r < R. The pegs are laid out in an array of equilateral triangles with distance d, d > 2R + 2r, between the centers of nearby pegs. (See the illustration below of a small part of the surface.) Assuming the rings drop vertically and "randomly," what is the probability of a ring being tossed onto a peg, in terms of R, r, and d?
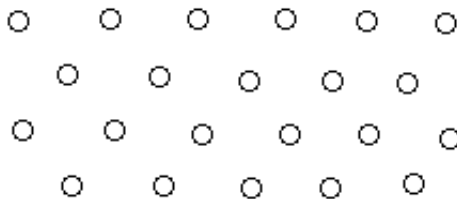
Solution: Observe that a ring lands on a particular peg exactly when the center of the ring is within R - r of the center of the peg. Dividing the plane into triangular regions as in the figure below, we see that the probability of this happening is the area of the three sectors of a circle divided by the area of the equilateral triangle.
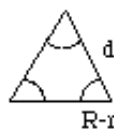
Therefore the probability is

$$\frac{\pi(R-r)^2/2}{\sqrt{3}d^2/4} = \frac{2\pi(R-r)^2}{\sqrt{3}d^2}.$$

Problem of the Month

The new Problem of the Month appeared in The Two Year College Mathematics Journal and is due to Sidney Kravitz. Assume x is on display on a hand-held calculator which has the square root, logarithmic, exponential, trigonometric, and inverse trig functions. The syntax of the calculator is that one begins with the number and then applies the function/operator to it.

(a) Calculate $x/\sqrt{1+x^2}$ in two keystrokes, and

(b) calculate $x/2$ in three keystrokes, but without using the keys for +, -, x, /, or any of the ten digits.

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.