TCU Math News Letter

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The present state of affairs is intolerable. Just think, the definitions and deductive methods which everyone learns, teaches and uses in mathematics, the paragon of truth and certitude, lead to absurdities! If mathematical thinking is defective, where are we to find truth and certitude?
--- David Hilbert

Editor: Dr. Rhonda Hatcher and Archive of Newsletters

Frank Stones Research Lectureship to Begin on Tuesday, September 12

Professor Jeffrey Mitchell of Baylor University will be the first speaker in the 2000-2001 Frank Stones Research Lectureship Series. His talk, entitled "Hermite Functions on Compact Lie Groups," will be presented at 4:00 p.m. on Tuesday, September 12, in Winton Scott Hall 145. Refreshments will be served in Winton Scott Hall 171 at 3:30 p.m. All TCU students, faculty, and other interested members of the community are invited to attend the lectures.

TCU Mathematics Department Offers Master of Arts in Teaching Degree

A Master of Arts in Teaching (MAT) degree program in mathematics has now been established at TCU. The MAT program prepares students to be highly qualified teachers of mathematics at the secondary and two-year college levels.

The first students admitted to the MAT program began their studies this fall. Three of the students, David Puente, Amy Ludington, Amy Couser, are enrolled as full-time students. Both David Puente and Amy Ludington are TCU graduates and have experience teaching in public schools. Amy Couser is a graduate of Texas A&M University. The remaining five students are enrolled part-time. They include Kelley Phillips, an engineer for the city of Fort Worth, and Ronda Schaefer, Jennifer Jones, and Alan Roemer, all of whom are teaching full-time in public schools.

Bucks for Books

The TCU Bookstore offers free textbooks to one student from each of the departments turning in their book orders on time. The Mathematics Department will now select its winning student by a lottery system. All mathematics majors are eligible. Points will be awarded for co-curricular activities such as attending Parabola and Research Lectureship talks, participating in the Calculus Bee and the Putnam, grading papers, working in the Math Clinic, and solving the Problem of the Month. Each activity will be worth a certain

number of entries in the lottery. Once finalized, details will be posted on the Parabola bulletin board in the middle of the main hall of the Mathematics Department and at the web site http://www.math.tcu.edu/math/BucksForBooks.html.

If you are a mathematics major interested in the contest, please sign up with George Gilbert, g.gilbert@tcu.edu, WSH 141, x6061.

2000 Calculus Bee Winners

On April 19, 2000 the TCU Mathematics Department held its annual Calculus Bee. The first place winner was Mitsutaka Shirasaki. Second place and third place went to Chi Wai Lam and Sunil Raju, respectively.

Solution to the April 2000 Problem of the Month

Problem: Because $3^2 + 4^2 = 5^2$, it is possible to cut 3x3 and 4x4 squares into a finite number of pieces that can be reassembled to form a 5x5 square. Do so using the smallest number of pieces possible. (From Southwest Missouri State University's archive of high school problems.)

Solution:
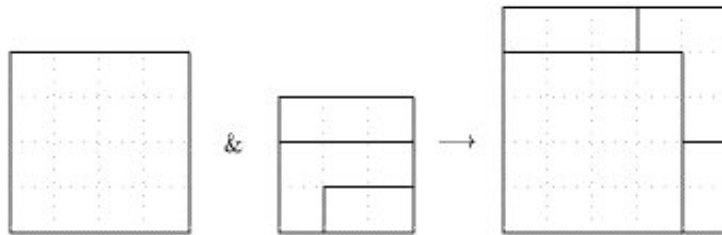
We won't prove that three pieces will not work. However, two key observations are that either the 3x3 or the 4x4 square must remain intact and that one piece from either cannot cover two opposite corners of the 5x5 square and can only cover two adjacent corners with a piece containing roughly a diagonal of the 4x4 square. (The side of the 5x5 square has length 5 and its diagonal has length $5\sqrt{2} = 7.0710\ldots$. Two points on the 3x3 square and on the 4x4 square cannot be further apart than $3\sqrt{2} = 4.2426\ldots$ and $4\sqrt{2} = 5.6568\ldots$, respectively.)

Problem of the Month

Pat states, "I have the same number of brothers as sisters." Pat's twin, Chris, replies, "But I have twice as many sisters as brothers." How many children are in their family?

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).