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# ***TCU Math News Letter***

**Volume 4, Number 7 April 1996**

*Once a new idea springs into existence, it cannot be unthought. There is a sense of immortality in a new idea.*

- Edward De Bono

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

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## **Sign up for the Calculus Bee**

The TCU Calculus Bee will be held on Tuesday, April 16 beginning at 3:30 p.m. in Winton Scott Hall 145. Please note that this is one week later than the date announced in the last newsletter. Refreshments for all the contestants will be served in Winton Scott Hall 171 from 3:00 to 3:30 p.m.

All TCU undergraduates are eligible to compete. The prizes have increased to \$75 for first place, \$50 for second place, and \$25 for third place. The first place student will also be awarded the use of Dr. Ken Richardson's office for one day.

In last month's newsletter it was stated that in the history of the TCU Integration Bee, only one student was a repeat winner. In fact, two different students were repeat winners: Doug Strout and Ted Strout. Doug was the Integration Bee winner in 1988, 1989, 1990 and 1991. Doug's younger brother Ted was the winner in 1993 and 1994. Fortunately for the contestants in this year's Calculus Bee, the Strout brothers have both graduated and will not be competing this year.

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

## **Lectureship Series Talk on Tuesday, April 2.**

The last talk in the TCU Research Fund Lectureship series for the 1995-1996 academic year will be presented by Professor Roger Zierau of Oklahoma State University.

He will present the talk "Geometric Constructions of Unitary Representations" on Tuesday, April 2 at 4:00 p.m. in Winton Scott Hall 145. Refreshments will be served in Winton Scott Hall 171 during the half-hour preceding the talk.

## **Mathematics Department Picnic on Sunday, April 28**

The annual Mathematics Department Picnic, sponsored by Parabola, the TCU Undergraduate Mathematics Club, will begin at 1 p.m. on Sunday, April 28 at the home of Dr. Rhonda Hatcher and Dr. George Gilbert

at 4204 Harlanwood Drive. Their home is only about one and a half miles from the TCU campus. If you need a ride, let Dr. Hatcher or Dr. Gilbert know and they will arrange one for you.

All TCU undergraduate students and mathematics faculty are invited to come. A sign-up sheet and maps to the picnic are in the Math Department Office in WSH 112.

## Two Mathematics Majors Earn Honors

The 1996 Senior Scholar of the Mathematics Department will be Santiago Lombeyda. Santiago will receive this honor at the Honors Banquet on April 11.

Junior mathematics major Tedi Donevska was recently selected to become a member of the Mortar Board honor society. Tedi was also chosen to be in Who's Who Among Students in American Universities and Colleges.

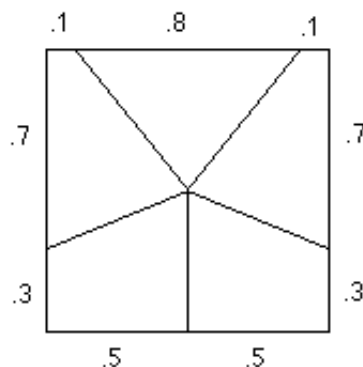
Congratulations Santiago and Tedi!

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## Solution to the March 1996 Problem of the Month

Five kids are at a birthday party. There is a square cake with icing on the top and sides. To keep the peace, the cake must be divided so that each child gets the same amount of cake and the same amount of icing. Find a simple way to accomplish the division and show that it is fair.

Solution: We must assume icing is uniformly spread on the top and on the sides of the cake. If we slice vertically, we can imagine the cake as two-dimensional. For each child to have the same amount of cake, each piece must then have the same area. For each child to have the same amount of icing, each piece must also have the same amount of the perimeter of the cake. Assume the square is 1 by 1. One possibility is to cut the cake as below, where the cuts intersect in the center of the square.



Each piece clearly intersects with perimeter of the square in segments whose lengths total .8. Furthermore, each of the five regions consists of one or two triangles with height  $1/2$  and bases totaling .8, hence areas equaling .2.

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## Problem of the Month

The April problem comes from this year's Konhauser Problemfest, a competition among undergraduates at Carleton, Macalester, St. Olaf, and St. Thomas colleges. What is the maximum greatest common factor of  $n^2$

+1 and  $(n+1)^2+1$  as  $n$  ranges over all integers?

**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.**

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**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 via e-mail.**