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# **TCU Math News Letter**

**Volume 4, Number 6 March 1996**

*In the beginning everything is self-evident, and it is hard to see whether one self-evident proposition follows from another or not. Obviousness is always the enemy of correctness.*

- Bertrand Russell

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

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## **Flashback to the Slide Rule Age at the Next Parabola Meeting**

Have you ever wondered what students did before the arrival of hand-held calculators when confronted with a nasty calculation problem? At the next meeting of Parabola, Dr. Victor Belfi of the TCU Mathematics Department, who was a student in the pre-calculator age (but after the invention of pencils), will answer this question. Dr. Belfi will talk about the slide rule and show us how it works.

Dr. Belfi's talk will be on Tuesday, March 26 at 3:30 p.m. in Winton Scott Hall 145. To get in the mood for the talk we will play songs from the 1950's while we enjoy refreshments in Winton Scott Hall 171 during the half-hour preceding the talk. You may want to dress in the appropriate attire for the occasion.

All TCU students, faculty, and other interested members of the community are welcome to attend the talk and join us for refreshments.

## **Calculus Bee to be held on Tuesday, April 9**

The TCU Mathematics Department will hold a Calculus Bee this year in place of the Integration Bee. Since software programs that perform algebraic integration are now widely available, the techniques of integration have been somewhat de-emphasized in the calculus courses at TCU. Because of this, the department has decided that a more general Calculus Bee would be a better contest for our students. The questions will be taken from all areas of calculus, not just integration.

The Calculus Bee will be held on Tuesday, April 9 beginning at 3:30 p.m. in Winton Scott Hall 145. Of course, there will be the requisite refreshments for all the contestants in Winton Scott Hall 171 from 3:00 to 3:30 p.m.

All TCU undergraduates are eligible to compete. A prize of \$50 will be awarded to the first place contestant, and prizes of \$30 and \$20 will go to the second and third place contestants, respectively.

Last year, the first place contestant in the Integration Bee was mathematics major Anna Mueller. The second and third place contestants were mathematics majors Diana Horst and Greg Perdue. All three of these students are still undergraduates at TCU and may be back to compete in this year's Calculus Bee. However, don't let this intimidate you. In the history of TCU Integration Bee, only one student has been a repeat winner, so anything can happen.

All students interested in participating in the Calculus Bee should sign up in the Mathematics Department Office.

## Four Mathematics Majors Invited to Join Phi Beta Kappa

The Mathematics Department has always been proud to claim several of TCU's best undergraduates as our majors, and this year is no exception. Four of our majors have recently been invited to join Phi Beta Kappa, the nation's oldest honor society. The honored students are Santiago Lombeyda, a December 1995 graduate, senior Troy Ludwick, and juniors Anna Mueller and Greg Perdue. Congratulations to these excellent students!

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## Solution to the February 1996 Problem of the Month

A group of  $n$  people play a round-robin tournament. Each game ends in either a win or a loss. Show that it is possible to label the players  $P_1, P_2, \dots, P_n$  in such a way that  $P_1$  defeated  $P_2$ ,  $P_2$  defeated  $P_3$ , ..., and  $P_{n-1}$  defeated  $P_n$ .

Solution: We use mathematical induction. When  $n=2$ , let  $P_1$  be the winner of the game and  $P_2$  be the loser. (You could even begin with  $n=1$ .) Now assume we may always order  $n-1$  players in the prescribed way. Therefore, we may order the first  $n-1$  players so that  $P_1$  defeated  $P_2$ ,  $P_2$  defeated  $P_3$ , ..., and  $P_{n-2}$  defeated  $P_{n-1}$ . Insert the last player just before the first of the other  $n-1$  players he or she defeats, or at the end if the player loses to all of the other  $n-1$  players. The conditions are satisfied, and the claim follows by induction.

## Problem of the Month

The month's problem was posted on the Internet by Ralph Craig. 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.

**Students and others are invited to submit solutions to Dr. George Gilbert (Math Dept. Office or TCU Box 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.**