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# ***TCU Math News Letter***

**Volume 10, Number 1 September 2001**

*The study of the infinite is much more than a dry, academic game. The intellectual pursuit of the Absolute Infinite is a form of the soul's quest for God. Whether or not the goal is ever reached, an awareness of the process brings enlightenment.*

--- Rudy Rucker, Infinity and the Mind

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

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## **Professor Ed Burger was the Green Honors Chair Professor in August 2001**

Professor Ed Burger of the Department of Mathematics at Williams College visited TCU on August 27 through 29 as the Green Honors Chair Professor. During his visit, Professor Burger gave guest lectures in some mathematics classes and presented three very lively talks: "The Texas Cake Cutting Massacre: can conflicts be resolved by making piece?" "How to Always Win at Limbo or You can sum some of the series some of the time and some of the series none of the time . . . but can you sum some of the series ALL of the time?" and "Magic with Mathematics: is the formula faster than the eye?"

## **TCU Lectureship Talks on September 11 and 25**

Professor Isabel Darcy of the University of Texas at Dallas will be the first speaker in the 2001-2002 TCU Research Lectureship Series. She will present the talk "Knot Theory and Modeling Protein Action" at 4:00 p.m. on Tuesday, September 11. The second talk in the Research Lectureship series will be presented by Professor James Cogdell of Oklahoma State University on Tuesday, September 25. His talk is entitled "Converse Theorems and the Lifting of Automorphic Forms." Both of these talks will be presented in Winton Scott Hall 145, and refreshments will be served in Winton Scott Hall 171 at 3:30 p.m. before each talk.

All TCU students, faculty, and other interested members of the community are invited to attend the lectures.

## **First Parabola Meeting on Tuesday, September 4**

Parabola, the TCU undergraduate mathematics club, will hold its first meeting on Tuesday, September 4. The meeting will begin with refreshments at 3:30 p.m. in Winton Scott Hall, Room 171. At 4:00 p.m. Professor Efton Park of the TCU Mathematics Department and TCU undergraduate Joey Gabele will present the talk "The Biology and Mathematics of DNA" in Winton Scott Hall Room 145

All TCU students, faculty, and other interested members of the community are invited to attend the meeting and talk. Students interested in joining Parabola should contact Professor Ken Richardson in Winton Scott

Hall 139 or by e-mail at [k.richardson@tcu.edu](mailto:k.richardson@tcu.edu).

## 2001 Calculus Bee Winners

On April 19, 2001 the TCU Mathematics Department held its annual Calculus Bee. The first place winner was Anantheswar Chennareddy. Second place and third place went to Matthew Kolman and Michael Carletti, respectively.

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## Solution to the April 2001 Problem of the Month

**Problem:** In Erewhon, income is taxed by both the state and federal governments. Each government recognizes the other's tax as the only deduction from taxable income. Furthermore, the tax must be paid during the year in which it accrues. If the federal tax rate is 20% and the state rate is 10%, how much tax should be paid to each on an income of 10,000? (Sidney Kravitz Journal of Recreational Mathematics)

**Solution:** Let  $x$  be the federal tax paid and  $y$  be the state tax paid. Then

$$y = .10(10000 - x) = 1000 - .1x,$$

$$x = .20(10000 - y) = 2000 - .2y$$

Solving the second equation for  $y$  yields  $y = 10000 - 5x$ . Thus,  $1000 - .1x = 10000 - 5x$ , or  $x = 9000/4.9 \approx \$1836.73$ , from which we find  $y = 10000 - 5(9000/4.9) \approx \$816.33$ .

TCU Undergraduate Ryan Dunning solved this problem.

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## Problem of the Month

Variants of this month's problem abound. Our version appeared at Southwest Missouri State University's Problem Corner.

With (otherwise) unmarked 7-cup and 11-cup measures, show how to obtain exactly two cups. You have a source of unlimited water and can throw water out, but have no other receptacle to store water.

(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](http://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.

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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 (Math Dept. Office or P.O. 298900).