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# **TCU Math News Letter**

**Volume 15, Number 6 April 2007**

The explosive freedom we gain from describing reality in mathematical metaphors is breathtaking. We can discover truths about ourselves that we could never have learned as poets writing in English.

-- Paul Rapp

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

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## **Calculus Bee on April 27**

The annual TCU Mathematics Department Calculus Bee will be held on Friday, April 27 at 4:00 p.m. in Tucker Technology Center 244. Refreshments for the contestants will be served at 3:30 p.m. in TTC 300.

All TCU undergraduates are eligible to compete. Prizes will be awarded to the top three finishers, with \$75 for first place, \$50 for second place, and \$25 for third place.

Students wishing to compete in the Calculus Bee should sign up in the Mathematics Department office in TTC 206. While there is no deadline for signing up, we would like to know who is participating as soon as possible

## **Mathematics Majors Honored**

Jeff Rhodes was named the TCU Mathematics Department Senior Scholar for 2007. He will receive this honor at the TCU Honors Banquet on April 19.

Mathematics majors, Natalie Rodriguez and Michael Haveman were recently honored with invitations to become members of Phi Beta Kappa. They will be inducted into membership on May 11.

## **Frank Stones Lectureship Talk On April 3**

Professor Allen Holder of Trinity University and the University of Texas Health Science Center will give a talk in the Frank Stones Research Lectureship series at TCU on Tuesday, April 3. The talk, entitled "The Mathematics of Radiotherapy Design" will be presented at 4:00 p.m. in TTC 244. In this talk, Professor Holder will begin with a rudimentary presentation of the underlying radiobiological assumptions that allow us to model the radiotherapy design process as an optimization problem. This abstraction supports a mathematical theory for treatment design, and this talk focuses on many of the mathematical results.

Refreshments will be served in TTC 300 at 3:30 p.m.

## TCU Student Research Symposium on April 20

The TCU Student Research Symposium (SRS) will be held on Friday, April 20, 2007. The purpose of the Student Research Symposium is to showcase both undergraduate and graduate science research in a relaxed, interdisciplinary setting. For more information about SRS, visit the SRS website [www.srs.tcu.edu](http://www.srs.tcu.edu).

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### Solution to the March 2007 Problem of the Month

Problem: Find all functions on the real numbers for which  $f(x)f(y) - f(xy) = x+y$ . (Due to Murray Klamkin.)

Solution: Setting  $y = 0$ , we see that  $f(0)(f(x)-1) = x$ . In particular  $f(0)$  is not equal to 0. Now set  $x = 0$  as well to see that  $f(0)$  is either 0 or 1, hence must be 1. It follows that  $f(x) = 1+x$ , which is easily checked to satisfy the functional equation.

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### April 2007 Problem of the Month

This month's problem was posed by Jerry Heuer of Concordia College for the Iowa Collegiate Mathematics Competition. A certain set of  $n$  integers has the property that the difference between the product of  $n-1$  of them and the remaining one is divisible by  $n$ . Prove that the sum of the squares of all  $n$  integers is divisible by  $n$ .

**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).**