TCU Math Newsletter

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The advancement and perfection of mathematics are intimately connected with the prosperity of the State.

-Napoleon

Christmas Buffet

The first annual Christmas Buffet of the TCU Computer Science, Engineering, and Mathematics Departments will be on Thursday, December 12 from 11:00 a.m. to 1:00 p.m. in Tucker Technology Center 300.

Please sign up with Veronica in Tucker Technology Center 207 to bring a dish (service for 20) or a donation.

TCU Lectureship Talk on January 21

Professor Robert Devaney of Boston University will be the next speaker in the TCU Lectureship series. The title of his talk is "The Fractal Geometry of the Mandelbrot Set." Robert Devaney is a very well known mathematician in the areas of chaos and fractals, and he is the author of several books on these topics, including *Chaos and Fractals: The Mathematics behind the Computer Graphics.* However, although this Robert Devaney is a prolific writer, it is probably a safe to bet that the book *Offensive Football Srtategies* was, in fact, written by the other Robert Devaney, former Nebraska head football coach.

The talk will begin at 4:00 p.m. in Tucker Technology Center 138. Refreshments will be served at 3:30 p.m. in TTC 300.

Summer Research Opportunities for Undergraduates

Undergraduate mathematics majors who are interested in participating in one of the National Science Foundation Research Experiences in Mathematics for Undergraduates Sites in the summer of 2003 will need to begin the application process soon. Many have application deadlines in February, and the applications typically require letters of recommendation from professors. The sites are located at universities across the country, and two, at Trinity University and Texas A & M University, are located in Texas.

In these projects, undergraduate students conduct mathematical research under faculty guidance. They generally run from six to eight weeks in length. The student participants receive a stipend, housing support, and sometimes travel support. The experience gained in these REU projects is particularly helpful for students considering graduate study in mathematics.

Undergraduates who are interested in learning more about or applying to one of the REU projects can find a list of NSF REU sites with web links to the individual programs at the web site

http://www.nsf.gov/home/crssprgm/reu/list_result.cfm?unitid=5044

The TCU Math Newsletter is published each month during the academic year.

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We're on the Web!
See us at:
www.math.tcu.edu

Solution to November 2002 Problem of the Month

Problem: Perhaps all of us have heard the expression "two wrongs don't make a right." Show that this isn't always true by finding the smallest five-digit number WRONG for which

$$2 \times \text{WRONG} = \text{RIGHT},$$

where each different letter represents a different digit from 0 through 9.

Solution:
The smallest WRONG is 12734. The smallest possible value for W is 1, which leads to R equal to 2 or 3, so let's look for a solution to
$2 \times 12\text{ONG} = 2\text{IGHT}$, where I must be 4 or 5. If I were 4, then if G were any of the remaining digits 0, 3, 5, 6, 7, 8, or 9, then either O or T would have to duplicate an allocated digit. We try I=5, making the equation $2 \times 12\text{ONG} = 25\text{GHT}$. We must have O at least 5, which means O at least 6 to avoid duplication. If O=6, then G=3, and then T=6, which is impossible. If O=7, then G=4, T=8, making the equation $2 \times 127\text{N4} = 254\text{H8}$, with 2N=H. The only possibility here is N=3, H=6, which works. (There are other solutions, the largest being 49357.)

Alissa Grissom responded that 3 lefts make a right ($3 \times 5830 = 17490$), which won't get us in trouble with our parents.

December 2002 Problem of the Month

This month's problem appeared in the journal Parabola. The ratio of the speeds of two trains is equal to the ratio of the times they take to pass each other going in the same or in opposite directions on parallel tracks. Find that ratio.

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.