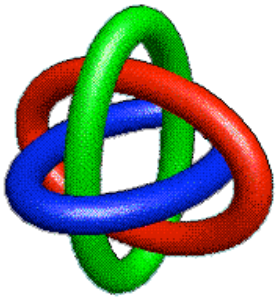
TCU MATH NEWSLETTER



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Our minds are finite, and yet even in the circumstances of finitude we are surrounded by possibilities that are infinite, and the purpose of life is to grasp as much as we can of that infinitude.

--- Alfred North Whitehead

Mathematics Talks at TCU in January

Three visiting professors will be presenting talks at TCU in January 2009. All students are strongly encouraged attend, especially the lunchtime talks which are targeted to students.

On Thursday, January 22, Professor Loren Spice from the University of Michigan will present a research talk entitled ***Harmonic analysis on reductive p-adic groups***. This talk will be at 3:00 p.m. in TTC 137. In this talk, Professor Spice will discuss a generalization of harmonic analysis to the setting of matrix groups over the p-adic numbers. In particular, he will describe recent joint work with Jeff Adler, towards an explicit Plancherel formula via character computations. Refreshments will be served before the talk in TTC 300.

Professor Spice will present an undergraduate talk on Friday, January 23 at 1:00 p.m. in TTC 137. The talk is entitled ***Alternatives to the real numbers***. All students attending will be treated to a free pizza lunch.

The second speaker this semester will be Professor Doug Haessig from the University of Rochester. He will present his research talk on Tuesday, January 27 at 3:00 p.m., and his undergraduate talk will be at 1:00 p.m. on Wednesday, January 28. Please check the web site www.math.tcu.edu for talk titles and room locations for these talks. They will be posted in the near future.

Professor Shea Vela-Vick, a Ph.D. candidate at the University of Pennsylvania, will be our third speaker in January. His research talk will be at 3:00 p.m. on Thursday, January 29, and his undergraduate talk will be at 1:00 p.m. on Friday, January 30. The talk titles and room locations will be posted at www.math.tcu.edu soon.

Two TCU Students Win TCTM Mathematics Specialist Scholarships

TCU undergraduates Ashley Larson and Jennifer Walker were both awarded $2000 TCTM Mathematics Specialist Scholarships for 2008-09. These scholarships were awarded by the Texas Council of Teachers of Mathematics to only ten students across all the colleges and universities in Texas. The scholarships are awarded to students who are student teaching in order to pursue teacher certification at the elementary, middle, or secondary level with a specialization or teaching field in mathematics. It is quite an accomplishment that two of the ten scholarships went to TCU students. Congratulations Ashley and Jennifer!

TCU students interested in applying for the TCTM scholarship for the 2009-10 academic year should watch for future information on the www.tctmonline.net. The application deadline is April 25, 2009.

TCU Career Expo on February 11, 2009

The TCU Career Expo for Spring 2009 will be held in the TCU recreation center gym on Wednesday, February 11 from 4:00 to 7:00 p.m. Many employers will be represented with full-time jobs, part-time jobs, and internships available. All TCU students and alumni are welcome to attend. For more information go to www.careers.tcu.edu.

Problems and Solutions

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

Editor:
Rhonda Hatcher

Problem Editor:
George Gilbert

Thought of the Month Editor:
Robert Doran

Solution to the November 2008 Problem of the Month

Problem: Ten people attempted to guess a 5-digit number, with guesses

17543, 30862, 05811, 49088, 98147, 54170, 87441, 63136, 72936, 29752.

Each person got exactly one of the digits correct (in its proper spot). What was the number?

Solution:

The number was 59846. The following is a slightly edited version of John LaGrone's solution.

The total number of correct digits is 10. The digits appearing more than once are

Column	Appears 2 times	Appears 3 times
2	7, 9	
3	8	1
4	3	4
5	1, 2, 6	

Because there are 10 different 1st digits, exactly one of them is correct. Thus, three people must get (at least) one of the final four digits correct. If the 3rd column were 1, the guesses 98147 and 63136 preclude 3 or 4 from the 4th column. In this case, at most 9 people could guess one digit correctly. Therefore, the 4th column is 4. Two people must guess columns 2, 3, and 5 correctly, forcing them to be 9, 8, and 6, respectively. Every guess has now exactly one digit correct except for 54170, so the 1st digit must be 5.

This month's problem was solved by math majors John LaGrone and Thanh Huynh and by physics graduate student Eric Gonzalez.

February 2009 Problem of the Month

This month's problem is due to I. B. Keane. In general, it takes $n+1$ values to determine a polynomial of degree n. Suppose, however, that someone has selected a polynomial with nonnegative integer coefficients of degree at most 2009 and that you are allowed to ask for the value of the polynomial at any integer you please. What is the smallest number of questions you need to determine the polynomial?

Students and others are invited to submit solutions to Dr. George Gilbert by e-mail (g.gilbert@tcu.edu) or hard copy (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.