TCU Math News Letter

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If but the will be firmly bent, no stuff resists the mind's intent.

- Oliver St. John Gregart

Editor: Dr. Rhonda Hatcher and Archive of Newsletters

Visiting Green Honors Chair Dr. Ronald Graham to be at TCU March 3 - 6

Dr. Ronald Graham, a world famous mathematician, will be visiting TCU as a Green Honors Professor at TCU on Monday March 4 through Wednesday, March 6.

Dr. Graham is a member of the National Academy of Sciences and is a past president of the American Mathematical Society. He is currently a professor at Rutgers University and director of the applied mathematics division of AT&T Bells Labs in New Jersey. Dr. Graham is also a serious juggler and is past president of the International Jugglers Association.

Dr. Graham will give four talks during his visit to TCU. The first talk, "Combinatorics and Computers," will be on Monday, March 4 at 4 p.m. The second talk, "Juggling Drops and Descents," will be at 4 p.m. on Tuesday, March 5. On Tuesday evening at 7:30 p.m., he will present a public lecture entitled "Searching for the Shortest Network." His final talk, "Arithmetic Progression: Past, Present, and Future," will be on Wednesday, March 6 at 3:30 p.m. The afternoon talks will all be in Winton Scott Hall 145 and the Tuesday evening lecture will be in Sid Richardson, Lecture Hall 2.

TCU students should find all of the talks interesting and educational. This is a rare opportunity to see a mathematician who is at the very top of his field.

Professor Susan Staples to Speak at Next Parabola Meeting

The first meeting of Parabola for the spring semester will feature Dr. Susan Staples of the TCU Mathematics Department.

Her talk, entitled "Card Tricks, Arithmetic Games and Geometry Riddles," will be presented on Tuesday, February 20 at 3:30 p.m. in Winton Scott Hall 145. Using only elementary mathematical ideas Dr. Staples will discuss some simple puzzles. Students interested in teaching and those who just love a little mathematical trivia should find this talk amusing.

Refreshments will be served during the half hour before the talk in Winton Scott Hall 171.

TCU Research Lectureship Talk on February 13

Professor Greg Hill of the University of North Texas will be next speaker in the TCU Research Lectureship schedule. He will present the talk "Representation Theory and Random Walks" on Tuesday, February 13 at 4 p.m. in Winton Scott Hall 145. Refreshments will be served in Winton Scott Hall 171 during the half hour preceding the talk.

Applications for NSF Research Experiences for Undergraduate Sites Now Being Accepted

The National Science Foundation Research Experiences for Undergraduate Sites for Summer 1996 have been announced. The sites will be at twenty different colleges across the United States. TCU will be the location of one of the REU Sites.

Student participants at the REU Sites will be involved in research projects lasting from six to ten weeks in the summer of 1996. The research is done under the direction of faculty. Participants are paid a salary and possibly housing or travel allowances.

Any TCU undergraduate interested in applying for a student participant position at one of the 1996 Sites should contact Dr. Rhonda Hatcher. Information about the REU sites can also be obtained at the Web page: http://www.siam.org/reu/reu.htm or through e-mail at reu.dms@nsf.gov.

TCU to Host an NSF-CBMS Regional Conference in 1996

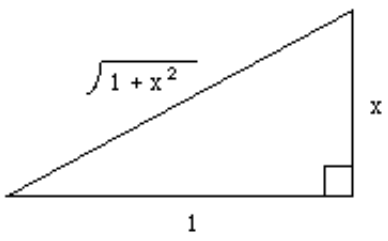
Professor Goro Shimura of Princeton University, one of the world's best number theorists, will be the featured speaker at an NSF-CBMS Conference at TCU on May 20- 24, 1996.

Professors Robert Doran, Ze-Li Dou, and George Gilbert were awarded a National Science Foundation Grant to fund the conference. The conference will feature not only Professor Shimura, but also many other prominent mathematicians.

Solution to the December 1995 - January 1996 Problem of the Month

Assume x is on display on a hand-held calculator which has the square root, logarithmic, exponential, trigonometric, and inverse trig functions. The syntax of the calculator is that one begins with the number and then applies the function/operator to it. (a) Calculate $x/\sqrt{1+x^2}$ in two keystrokes, and b) Calculate x/2 in three keystrokes, but without using the keys for +, -, x, /, or any of the ten digits.

Solution: (a) Consider the right triangle below. Observe that x and $x/\sqrt{1+x^2}$ are the tangent and the sine, respectively, of the angle opposite x. Thus, $x/\sqrt{1+x^2} = \sin(\arctan x)$. (This holds for x negative as well.)



(b) We have $x/2 = \ln(e^{x/2}) = \ln(\sqrt{e^x})$.

Correct solutions were received from Brad Beadle, Peter Leath, and Adam Zerda.

Problem of the Month

The February Problem of the Month appeared in Loren Larson's Problem Solving Through Problems.

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, ..., P_n in such a way that P_1 defeated P_2, P_2 defeated P_3, ..., and P_{n-1} defeated P_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.

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.