TCU Math News Letter

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Referee's Report: This paper contains much that is new and much that is true. Unfortunately, that which is true is not new and that which is new is not true.

-anonymous

Editor: Dr. Rhonda Hatcher and Archive of Newsletters

Parabola Talk on November 18

On Tuesday, November 18, Professor Ze-Li Dou of the TCU Mathematics Department will speak at a meeting of Parabola, the undergraduate mathematics student organization. The title of his talk is "Can You Prove Fermat's Last Theorem?" Fermat's Last Theorem states that there are no solutions in the positive integers to the equation $x^2 + y^2 = z^2$ for $n \geq 3$. Although Pierre de Fermat claimed to have a proof in the 17th century, he did not write one down. In spite of attempts by many to prove it, it remained unsolved for over 300 years. It was finally proven by Andrew Wiles in 1994 with the use of very advanced mathematics. The talk will be at a level appropriate for all undergraduate students.

The talk will be from 3:30 to 4:30 p.m. in Tucker Technology Center 138. Refreshments will be served at 3:00 p.m. in TTC 314.

Advising Required for Freshmen and New Transfer Students

All freshmen and new transfer students must undergo academic advising before registering for spring classes. To find their academic advisors, students should visit the web site my.tcu.edu. Holds on freshmen and new transfer students' records will be removed once advising has been completed.

This policy comes at the recommendation of a task force (made up of students, faculty and staff) formed by the Student House of Representatives. The purpose of the policy is to ensure that new students have contact with an advisor who is or may be (for pre-majors) in their major department and ensure that new students receive appropriate guidance in course selection and other issues.

Interest Theory and Differential Geometry Courses Offered in Spring 2004

Two upper level classes that are not offered every year will be offered in the Spring 2004 semester.

The first course is Math 30603 Interest Theory. It is offered only once every two years. It is required for students wishing to complete the actuarial concentration in mathematics. The prerequisite for the course is Calculus II.

Professor Ken Richardson will be teaching Differential Geometry in the Spring 2004 semester. This class is not regularly offered, so those wishing to take it should take advantage of this opportunity. Undergraduate students should register for the course listing with the 50323 number and graduate students should register for 60970. The prerequisites for the class are Linear Algebra and Calculus III.

Solution to the October 2003 Problem of the Month

Problem: Show that the equation $x^2 - y^2 = a^3$ always has integer solutions whenever a is a positive integer. (First Indiana College Mathematics Competition)

Solution: Factor $x^2 - y^2$ as $(x - y)(x + y)$ and a^3 as $a \cdot a^2$. Solving $x - y = a$, $x + y = a^2$, we obtain $x = \frac{a(a+1)}{2}$ and $y = \frac{a(a-1)}{2}$. As products of consecutive integers, both $a(a+1)$ and $a(a-1)$ are even, so x and y are integers. This month's problem was solved jointly by undergraduates Kris Garrett and Alissa Grissom and by Jason Eberle.

November 2003 Problem of the Month

This month's problem was suggested by Professor Scott Nollet. Show that the x-coordinate of the point of intersection of the tangent lines to a parabola $y = ax^2 + bx + c$ at the points (x_1, y_1) and (x_2, y_2) is always $(x_1 + x_2)/2$.

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