
TCU Math News Letter

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Irrationality is the square root of all evil.

--- Douglas Hofstadter

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

First Parabola Meeting On Tuesday, October 20

Professor Ze Li Dou of the TCU Mathematics Department will be the featured speaker at the next meeting of Parabola, the TCU undergraduate mathematics club. The title of his talk is "A World of Symmetries."

We will have refreshments beginning at 3:00 p.m. in Winton Scott Hall 171, and then move to room 145 for the talk at 3:30 p.m.. All TCU students, faculty, and other interested members of the community are invited to attend.

Membership in the MAA

Parabola is an official student chapter of The Mathematical Association of America (MAA). As such, we can offer student memberships to the MAA for TCU students at a very discounted cost. The cost for students is only \$10 per year plus \$10 or \$20 for a subscription to one of the MAA journals. All TCU mathematics majors are encouraged to join. For more information and for membership applications please see [Dr. Rhonda L. Hatcher](#) in WSH 142.

Solution to the September 1998 Problem of the Month

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Problem: A football player is returning a kickoff. He is 50 yards from the goal line, running in a straight line along the sideline at 10 yards per second. The only player with a chance to catch him is 40 yards from the goal line and 20 yards from the sideline, running at 9 yards per second. If this player takes the best angle of pursuit, where will he catch the player returning the kickoff?

Solution: Let the defender catch the returner x yards from the goal line. Then the returner has run $50 - x$ yards while, using the Pythagorean theorem, the defender has run $\sqrt{(40 - x)^2 + 20^2} = \sqrt{2000 - 80x + x^2}$ yards. Taking into account their speeds and setting the time to run these distances equal yields

$$\frac{50 - x}{10} = \frac{\sqrt{2000 - 80x + x^2}}{9}.$$

Squaring both sides and simplifying leads to the quadratic equation $19x^2 + 100x - 2500 = 0$,

whose positive solution is $x = \frac{100\sqrt{5} - 50}{19} = 9.14$ yards.

The problem was solved by Sunny Britting, Olga Isaeva, and Tim Matthews.

Problem of the Month

This month's problem appeared as Macalester College's Problem of the Week and is due to Bo Green of Abilene Christian University: Which triangles can be split into two isosceles triangles?

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).