
TCU Math News Letter

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The whole point of this sentence is to make clear what the whole point of this sentence is.

--- Douglas Hofstadter

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

Calculus Bee on April 9

The TCU Mathematics Department Calculus Bee will be held on Thursday, April 9 beginning at 4:00 p.m. in Winton Scott Hall 145. There will be refreshments for all of the contestants in Winton Scott Hall 171 from 3:30 to 4:00 p.m.

All TCU undergraduates are eligible to compete. A cash prize of \$75 will be awarded to the first place finisher, \$50 will go to the second place finisher, and the third place finisher will be awarded \$25.

Students interested in competing in the Calculus Bee should sign up in the Mathematics Department Office in Winton Scott Hall 112.

Charlie Bingham Named Senior Scholar of the Mathematics Department

The 2002 Senior Scholar of the TCU Mathematics Department will be Charlie Bingham. Charlie will receive this honor at the Honors Banquet on Thursday, April 4.

Three April Parabola Meetings

The next meeting of Parabola, the TCU mathematics student organization, will be on Thursday, April 18 and begin with refreshments at 3:30 in Winton Scott Hall 171. At 4:00 p.m., undergraduate mathematics major Amanda Knecht will present the talk "Understanding Zeta Functions" in Winton Scott Hall 145.

Parabola will meet again for a movie party on Friday, April 19 from 3:00 to 5:00 p.m. Dear Brigitte, a 1965 movie starring Jimmy Stewart, Bill Mummy, and Brigitte Bardot will be shown, and popcorn and other refreshments will be served. The movie is about a boy genius with a brain that can best computers and also compute racetrack odds for immense profit. But, the boy genius also has interests beyond mathematics: he'll do anything to meet the woman of his dreams. Dr. Richardson claims that the movie is funny even when it doesn't try.

The third meeting of Parabola in April will be on Thursday, April 23, when undergraduate mathematics major Charlie Bingham will present the talk "Applications of Game Theory to Economics." The talk will be

given in Winton Scott Hall 145 at 4:00 p.m., and refreshments will be served during the half-hour preceding the talk in Winton Scott Hall 171.

Goldwater Scholarship Awarded to TCU Mathematics Major Ryan Dunning

Ryan Dunning, a TCU mathematics major, was recently awarded a Barry M. Goldwater Scholarship for the 2002-2003 academic year. This very prestigious scholarship is awarded to undergraduates majoring in mathematics, science, or engineering. This year, only 309 awards were given across the United States, with 24 awarded to mathematics majors.

The Goldwater Scholarship covers the cost of tuition, fees, books, and room and board up to a maximum of \$7,500 per year.

Ryan's career goal is to earn a Ph.D. in mathematics and to become a college professor, conducting research in mathematics, with special emphasis in physics or economics.

Solution to the March 2002 Problem of the Month

Problem: Find the minimum value of $x^x y^y$ where x and y are positive numbers whose sum is 2002.

Solution: The minimum value is 1001^{2002} . We wish to minimize $x^x (2002 - x)^{2002 - x}$ for $0 < x < 2002$. Because the logarithm is an increasing function, this function will be minimized for the same value of x that minimizes

$$f(x) = \ln(x^x (2002 - x)^{2002 - x}) = x \ln x + (2002 - x) \ln(2002 - x).$$

We have $f'(x) = \ln x + 1 - \ln(2002 - x) - 1 = \ln x - \ln(2002 - x)$, which is 0 for $x = 2002 - x$ or $x = 1001$. Now, $f''(x) = \frac{1}{x} + \frac{1}{2002 - x}$ and $f''(1001) = \frac{2}{1001}$. Thus, f has a relative minimum at $x = 1001$, which must also be an absolute minimum because the domain has no other critical numbers. Plugging $x = 1001$ into the original function yields its minimum value of 1001^{2002} .

This month's problem was solved by math major Matt Farmer.

Problem of the Month

This month's problem was inspired by the phone call of a member of the Fort Worth community to the Department of Mathematics, taken by George Gilbert. Twelve golfers plan to play in three foursomes over four days, with the composition of each foursome varying each day. Is it possible to arrange the foursomes so that every two golfers play in the same foursome on (at least) one of the days?

(Remember that math majors will earn 10 points in the Bucks for Books lottery for a correct solution. For details and other ways to earn points, refer to the September 2000 Newsletter or visit the web page

www.math.tcu.edu/math/BucksForBooks.html)

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).