TCU Math News Letter

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Do not worry about your difficulties with mathematics, I assure you that mine are greater.

-Albert Einstein (1879 - 1955)

Editor: Dr. Rhonda Hatcher and Archive of Newsletters

Job Candidate Talks

The TCU Mathematics Department plans to hire a new assistant professor for a position beginning in Fall 2004. We expect to bring candidates for the postion to campus during the months of February and March. Each candidate will be giving talks during their visit. Please watch the Mathematics Department web page http://www.math.tcu.edu/, for details about the dates, titles, and locations of the talks. Undergraduates are especially encouraged to come and offer feedback on the candidates.

Career Night and Junior Jumpstart

TCU Career Night will be held on February 11, 2004 from 4:00 p.m. until 7:00 p.m in the Student Center Ball Room. Over forty employers will set up booths and will have representatives present to talk about employment, internships, and positions in their organizations. The program is co-sponsored by University Career Services, the M. J. Neeley School of Business Chapter of Delta Sigma Pi, and the TCU chapter of the Public Relations Student Society of America. The employers attending will be seeking students from most of the majors offered by TCU. TCU Career Night is also open to freshmen and sophomores who would like to talk about occupations with these employers.

Another program offered by University Career Services is Junior Jumpstart. This program gives juniors who are applying for internships or graduate school, or who just want to get a jumpstart on preparing for their job hunt, the opportunity to learn about successful search strategies and techniques. Junior Jumpstart is a one-day conference that covers topics such as researching employers or schools, identifying prospective programs or employers, understanding the application process, application and resume writing, and interviewing.

For more information about both of these programs visit the University Career Services web page http://www.cpl.tcu.edu/.

## Texas Geometry and Topology Conference at TCU

The Spring 2004 meeting of the Texas Geometry and Topology Conference will be held on February 27-29, 2004 at Texas Christian University. The conference is hosted by TCU and the University of Texas at Arlington.

The conference will begin Friday evening, February 27, with a complimentary pizza dinner from 6:30-8:00 p.m. in Tucker Technology Center 139. After dinner, at 8:00 p.m., Professor Steven Semmes of Rice University will present the talk "Happy Fractals." Undergraduates are encouraged to attend this talk, which will be given in TTC 138.

The conference will continue all day Saturday, and until noon on Sunday. For more information about the conference, visit the web site http://faculty.tcu.edu/epark/tgtc2004.html.

Solution to the December 2003-January 2004 Problem of the Month

Problem: One square is inside another with corners connected to form four quadrilaterals with areas A, B, C, D as shown in the figure. Show that $A + C = B + D$. (Due to V. Dubrosky.)
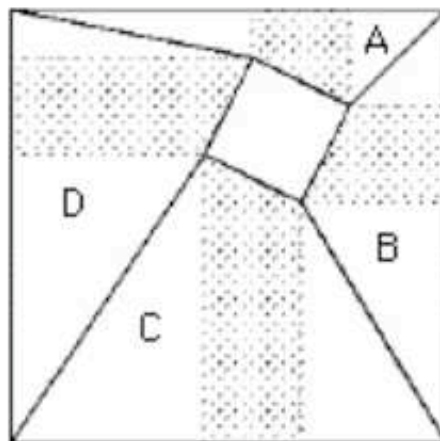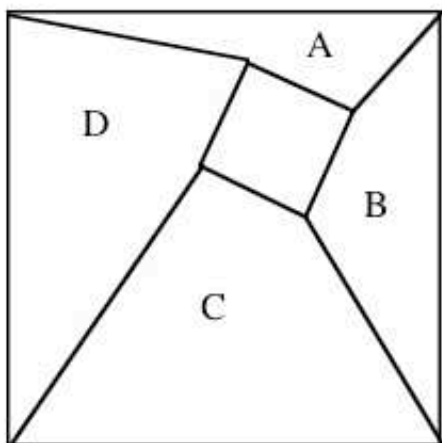
Solution: Divide the large square as shown in the second figure above. The four rectangles in the corners of the original square each have half in either A or C and half in either B or D. Thus, we need only show that the combined area of the shaded trapezoids in A and C equals that of B and D. Shifting the small square vertically does not change the shapes of the trapezoids in B and D. Furthermore, they may be placed together to form a rectangle which doesn't change its shape if we shift the small square horizontally. Thus, the combined area of the trapezoids in B and D, and similarly that of A and C, does not change if we translate the small square (without rotating it). Translating the small square so that its center coincides with that of the large square, we see by symmetry that the combined areas must be equal.

February 2004 Problem of the Month

With the recent cold weather, it seems appropriate that this month's problem comes from the Nordic Mathematical Contest, year unknown, by way of the Southwest Missouri State University Problem Corner.

Let F be a function from the interval [0,1] to itself having the following properties:

(i) F is increasing, i.e. $x \le y$ implies that $F(x) \le F(y)$;

(ii) $F(x/3) = F(x)/2$;

(iii) $F(x) + F(1 - x) = 1$.

Find the values of $F(1/13)$ and $F(1/2^{1/2})$.