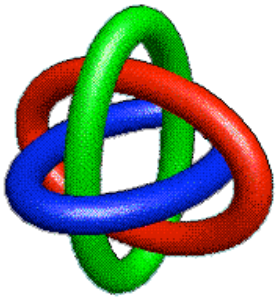
TCU MATH NEWSLETTER



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I attempted mathematics, and even went during the summer of 1828 with a private tutor (a very dull man) to Barmouth, but I got on very slowly. The work was repugnant to me, chiefly from my not being able to see any meaning in the early steps in algebra. This impatience was very foolish, and in after years I have deeply regretted that I did not proceed far enough at least to understand something of the great principles of mathematics; for men thus endowed seem to have an extra sense. But I do not believe that I should ever have succeeded beyond a very low grade.

- Charles Darwin

Green Honors Chair Visit on September 8-10

Professor John Baez of the University of California, Riverside will be visiting TCU in September as a Green Honors Chair Professor. He will be visiting the Mathematics Department on September 8 through 10, during which he will present a series of five talks.

The first talk, ***My Favorite Numbers: 5***, will be on Tuesday, September 8 at 1:00 pm in TTC 139. Professor Baez will also present a public lecture on the evening of September 8 at 7:00 pm. His public lecture is entitled ***Zooming Out in Time: A History of Climate Change***, and will be presented in Palko Hall, EDU-130. On Wednesday, September 9, Professor Baez will present two talks in TTC 139. The first talk that day is ***My Favorite Numbers: 8***, and will be at 1:00 pm. The second talk is ***Fundamental Physics: Where We Stand Today***, and will be at 4:00 pm. The final talk in this series is ***My Favorite Numbers: 24***. It will be given in TTC 139 on Thursday, September 10 at 1:00 pm.

All of the talks are appropriate for undergraduates, faculty, and other members of the community. Refreshments will be served in TTC-300 in the half hour before each of the afternoon talks, and refreshments for the evening lecture will be outside the lecture room after the talk. For detailed abstracts of each talk visit the TCU Mathematics Department web page at www.math.tcu.edu

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TCU Career and Intern Expo on September 23

TCU Career Services is hosting a Career and Intern Expo open to all students and alumni on Wednesday, September 23, from 4:00 to 7:00 pm in the Campus Recreation Gym. At the Expo, you can meet top employers that are looking for interns and full-time employees for postitions across the country.

If you want to attend, be sure to come prepared by bringing copies of an up-to-date résumé. For more information about the Career and Intern Expo, including a list of the employers that will attend, visit the web site www.careers.tcu.edu

Problems and Solutions

The TCU Math Newsletter is published each month during the academic year.

Editor:
Rhonda Hatcher

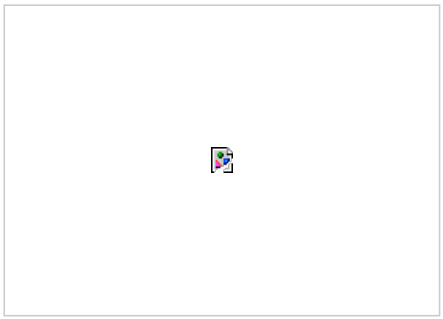
Problem Editor:
George Gilbert

Thought of the Month Editor:
Robert Doran

Solution to the April 2009 Problem of the Month

Problem: Find the right circular cone of minimum volume that is circumscribed about the unit cube, with one face of the cube in the base of the cone.

Solution: Let r be the radius of the cone and h be its height. Then we want to minimize the volume $V = \pi r^2 h/3$. Consider the plane through the vertex of the cone and four vertices of the cube, as shown below.



By similar triangles, $r/h=(1/\sqrt{2})/(h-1)$. Replacing r, $V = \pi h^3/(6(h-1)^2)$, where h>1. Differentiating and simplifying, we find $V' = \pi (h^3-3h^2)/(6(h-1)^3)$. The critical point in our domain is $h=3$, which yields a minimum by the first derivative test. Substituting back, we find $r=3/(2\sqrt{2})$.

September 2009 Problem of the Month

For every integer n greater than 2, show there exist distinct positive integers a and b such that $2/n = 1/a + 1/b$.

Students and others are invited to submit solutions to Dr. George Gilbert by e-mail (g.gilbert@tcu.edu) or hard copy (Math Dept. Office or TCU Box 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.