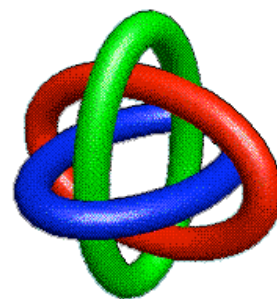


TCU MATH NEWSLETTER



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November 2008
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Don't just read it; fight it! Ask your own questions, look for your own examples, discover your own proofs.

--- Paul Halmos (1916 - 2006)

TCU Frank Stones Lectureship Research Series Talks on November 4 and 18

On Tuesday, November 4, Professor Dawei Chen from the University of Illinois at Chicago will be present the talk *Mori's theory for the Kontsevich space of twisted cubics* as part of the Frank Stones Lectureship Research Series. In this talk he will discuss twisted cubics, which are degree three smooth rational curves in projective three space. There are several different compactifications for the space of twisted cubics, such as the Kontsevich space of stable maps, the Hilbert scheme, and the Chow variety. Professor Chen will discuss the geometry of those compactifications and display their interconnections from the viewpoint of Mori's theory.

There will be a second Research Series talk in November. That talk will be on Tuesday, November 18, and the speaker will be Professor Tobias Hagge from the University of Texas at Dallas. Check the TCU Mathematics Department web page for details later this month.

Both talks will be at 4:00 p.m. in Tucker Technology Center 245. Refreshments will be served in TTC 300 at 3:30 p.m. All TCU students and faculty and other interested members of the community are invited to come.

Parabola Meeting on Thursday, November 13

Parabola, the TCU undergraduate mathematics student organization, will meet on Thursday, November 13, at 4:00 p.m. in TTC 138. The meeting will feature a talk by Professor George Gilbert. His talk is entitled *Scheduling Games, Meetings, or Whatever*. The talk will begin with the problem of scheduling a Tuesday-night softball league of $2n$ teams to play each other exactly once over $2n-1$ weeks (a round robin tournament). To appreciate the difficulty of solving this problem without a systematic approach, you might try this for 10 teams. The talk will continue with related scheduling problems, including some that are unsolved. Refreshments will be served before the talk in TTC 300 at 3:30 p.m.

Actuarial Information Meeting On November 5

TCU students interested in learning more about the actuary profession, should come to the presentation by Catherine Taylor of USAA on Wednesday, November 5 from 12:00 noon to 1:00 p.m. in TTC 139. By attending the presentation, you will learn about what an actuary does and about career options and internship opportunities at USAA.

Problems and Solutions

Solution to the October 2008 Problem of the Month

Problem: Two dice each have faces labeled $1, 2, \dots, n$ ($n \geq 4$). Each of the n faces is

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Editor:
[Rhonda Hatcher](#)

Problem Editor:
[George Gilbert](#)

**Thought of the
Month
Editor:**
Robert Doran

equally likely to come up when the dice are rolled. What is the probability the sum of the two dice is the same for two rolls of the pair? Your answer should be a simplified quotient of polynomials in n .

Solution: The probability the sum of two dice is 2 or $2n$ is $1/n^2$, 3 or $2n-1$ is $2/n^2$, 4 or $2n-2$ is $3/n^2$, ..., n or $n+2$ is $(n-1)/n^2$, $n+1$ is n/n^2 . Thus, the probability two rolls of two dice yield the same sum is

$$\begin{aligned} 2 \left\| \frac{1}{n^2} \right\|^2 + \dots + 2 \left\| \frac{n-1}{n^2} \right\|^2 + \left\| \frac{n}{n^2} \right\|^2 &= \frac{2(1^2 + \dots + n^2) - n^2}{n^4} \\ &= \frac{2(n(n+1)(2n+1)/6) - n^2}{n^4} = \frac{2n^2 + 1}{3n^3} \end{aligned}$$

This month's problem was solved by math major Liron Bainglass. Consequently, you should look for Darren Ong and his bubble-gum colored hair over the next several days.

November 2008 Problem of the Month

Ten people attempted to guess a 5-digit number, with guesses

17543, 30862, 05811, 49088, 98147, 54170, 87441, 63136, 72936, 29752.

Each person got exactly one of the digits correct (in its proper spot). What was the number?

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.