TCU Math News Letter

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I knew a mathematician who said, 'I do not know as much as God, but I know as much as God did at my age.'

--- Milton Shulman

Editor: Dr. Rhonda Hatcher and Archive of Newsletters

Colloquium Lecture

Professor Alfredo Poirier of Pontificia Universidad Cat—lica del Perœ will present the talk "What is Poincare's Conjecture?" in a colloquium lecture in the TCU Mathematics Department on Monday March 5, 2001. Professor Poirier will be visiting TCU as part of a faculty exchange program between TCU and Pontificia Universidad Cat—lica del Perœ. The talk will begin at 3:30 p.m. in Winton Scott Hall 145. Refreshments will be served in Winton Scott Hall 171 at 3:30 p.m.

Calculus Bee on April 19

The TCU Mathematics Department Calculus Bee will be held on Thursday, April 19 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.

Last year, the first place contestant in the Calculus Bee was Mitsutaka Shirasaki. The second and third place contestants were Chi Wai Lam and Sunil Raju.

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

Discussion of the Actuarial Profession at March 27 Parabola Meeting

Roger Ray, a representative from an actuarial firm in Dallas, will give an informal presentation and hold a question and answer session about the actuarial profession at the next meeting of Parabola on Tuesday, March 27. The meeting will start at 3:30 p.m. in Winton Scott Hall 171. Refreshments will be provided. All undergraduate students interested in finding out more about the actuarial profession are invited to attend.

Chaotic Pizza and Movie Party on Wednesday, April 11

Parabola, the TCU undergraduate mathematics club, will host a pizza and movie party on Wednesday, April 11, 4:30-5:30 p.m. We will watch a video on chaos and dynamics. After the video is played, Professor Igor Prokhorenkov will be available to answer questions students may have about the mathematics presented in the video. All TCU students, faculty, and friends of the Mathematics Department are invited to attend.

Solution to the February 2001 Problem of the Month

Problem: A deck of 52 playing cards is shuffled and placed face down on a table. Cards are removed from the top of the pile until a black ace is encountered. In which position is this ace most likely to be found? (Originally due to J. Ennis in Function.)

Solution: The first position is the likeliest. The probability a black ace is in the nth position is $2/52 = 1/26$. Given that this occurs, for it to be the first ace also requires that the other black ace is in a later spot, which occurs with probability $(52 - n)/51$. Therefore, the probability the first black ace is in the nth position is $\frac{1}{26} \cdot \frac{52 - n}{51} = \frac{52 - n}{1326}$, which decreases with n.

Math major Jeff Bradley correctly solved this month's problem.

Problem of the Month

This month's problem of the month is such a nice problem that it appeared twice as Macalester College's Problem of the Week.

Suppose that we wish to know which windows in a 36-story building are safe to drop eggs from, and which will cause the eggs to break on landing. We assume:
- The effect of a fall is the same for all eggs. An egg that survives a fall can be used again. A broken egg must be discarded.

-If an egg breaks when dropped, then it would break if dropped from a higher window. If an egg survives a fall then it would survive a shorter fall.

(It is not ruled out that the first-floor windows break eggs, nor is it ruled out that the 36th-floor windows do not cause an egg to break.)

If only one egg is available and we wish to be sure of obtaining the right result, the experiment can be carried out in only one way. Drop the egg from the first-floor window; if it survives, drop it from the second floor window. Continue upward until it breaks. In the worst case, this method may require 36 droppings. Suppose 2 eggs are available. What is the least number of egg-droppings that is guaranteed to work in all cases?

(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).