
TCU Math News Letter

Volume 15, Number 4 February 2007

Anyone who considers arithmetical methods of producing random digits is, of course, in a state of sin.

-- John von Neumann

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

Parabola Meeting on February 20

Parabola, the TCU undergraduate mathematics student organization, will meet on Tuesday, February 20. The meeting will begin with refreshments in Tucker Technology Center 300 at 3:00 p.m. followed by a talk by Professor George Gilbert at 3:30 p.m. in TTC 244.

Professor Gilbert will talk about "Modeling Expected Value in Poker Tournaments." The talk will be appropriate to students of all levels.

The talk is open to all students, faculty, and others interested in mathematics. Students interested in joining Parabola should come to a meeting or contact Professor Ken Richardson at k.richardson@tcu.edu.

Professor Bob Devaney to be the 2007 Math Greens Honors Professor

Professor Bob Devaney of Boston University will be the 2007 Math Green Honors Professor. His visit will be on the dates of Monday, March 5 through Wednesday, March 7. Dr. Devaney is the author of numerous books and articles on chaos and dynamical systems, and a gifted public speaker.

The speaking schedule for Dr. Devaney will include three lunchtime talks (with free pizza), an afternoon talk on Monday, and an evening talk on Tuesday. Details about the titles, times and locations of the talk will be in the March newsletter.

For more information about Professor Devaney, you can visit his web site <http://math.bu.edu/people/bob/>.

Texas Geometry and Topology Conference at TCU on March 23-25, 2007

The Texas Geometry and Topology Conference, hosted by TCU and The University of Texas at Arlington will be held on March 23-25, 2007 in the Tucker Technology Center at TCU. The conference will feature many speakers, including Professor Dick Canary of the University of Michigan and Professor Robin Hartshorne of the University of California at Berkeley.

The conference is supported by the National Science Foundation, TCU, and UTA. There are no registration fees.

For more information about speakers and lodging or to register to attend, visit the conference web site <http://faculty.tcu.edu/epark/tgt007.html>.

Parabola Habitat for Humanity Workday

Parabola, the TCU undergraduate mathematics student organization, is planning to hold a Habitat for Humanity workday this spring. Details on the date and location will be available later.

Solution to the November 2006 Problem of the Month

Problem: Suppose teams A and B are playing a best of $2n-1$ series (i.e. first team to win n games wins the series). If team A has probability $p > 1/2$ of winning any given game of the series, show that A's probability of winning the series increases as n increases.

Solution: We may pretend all $2n - 1$ games of the series are played, with whoever wins the most games winning the series. We track the net change in the probability of team A winning as we increase the series by 2 games. Team A gains when team B wins n of the first $2n - 1$ games and team A wins the last 2, and loses in the reverse situation. Calculating the binomial probabilities, we see the net gain in team A's probability by playing two more games is

$${}_{2n-1}C_n p^{n-1} (1-p)^n p^2 - {}_{2n-1}C_n (1-p)^{n-1} p^n (1-p)^2 = {}_{2n-1}C_n p^{n-1} (1-p)^{n-1} (2p-1) > 0.$$

This month's problem was solved by Darren Ong.

February 2007 Problem of the Month

Find a line that is tangent to the curve $y = x^4 - 8x^3 + 6x^2 - 8x + 1$ at two points.

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).