

TCU Math Newsletter

If you listen to the great Beatles records, the earliest ones where the lyrics are incredibly simple. Why are they still beautiful? Well, they're beautifully sung, beautifully played, and the mathematics in them is elegant.

- Bruce Springsteen

TCU Math Club Meetings in October

The TCU Math Club meeting on Thursday, October 13 will feature short attention span talks. The second meeting of the month will be on Thursday, October 25 and will feature a Halloween event. Both meetings are at 5:30 to 6:30 pm in TUC 300. Membership in the TCU Math Club is open to all TCU students. You can join the TCU Math Club on engage.tcu.edu, and follow @tcumathclub on Instagram to stay up-to-date on meetings. For more information, contact the current president Maithili Bhate at MAITHILI.BHATE@tcu.edu.

Colloquium Talk on October 21

Professor Jacob Russell of Rice will present the talk "Surface Bundles, Geometry, and Convex Cocompactness" in the TCU Colloquium series on Friday, October 21 at 4:00-5:00 pm in TUC 137 with refreshments before the talk in TUC 300 at 3:00 pm. The talk can also be seen on Zoom at the link <https://tcu.zoom.us/j/92591498545>

Gamma Iota Sigma Fundraiser

Gamma Iota Sigma is having a fundraiser at McAclister's Deli at 3053 University Drive on Tuesday, October 11 from 5:00 to 8:00 pm. All are welcome! Please mention GIS at check out. You may RSVP here:

<https://www.groupraise.com/events/232012>
Gamma Iota Sigma (GIS) is a collegiate professional fraternity that promotes, encourages, and sustains student interest in insurance, risk management, and actuarial science as professions. All TCU students are welcome to participate.

Putnam Mathematics Contest

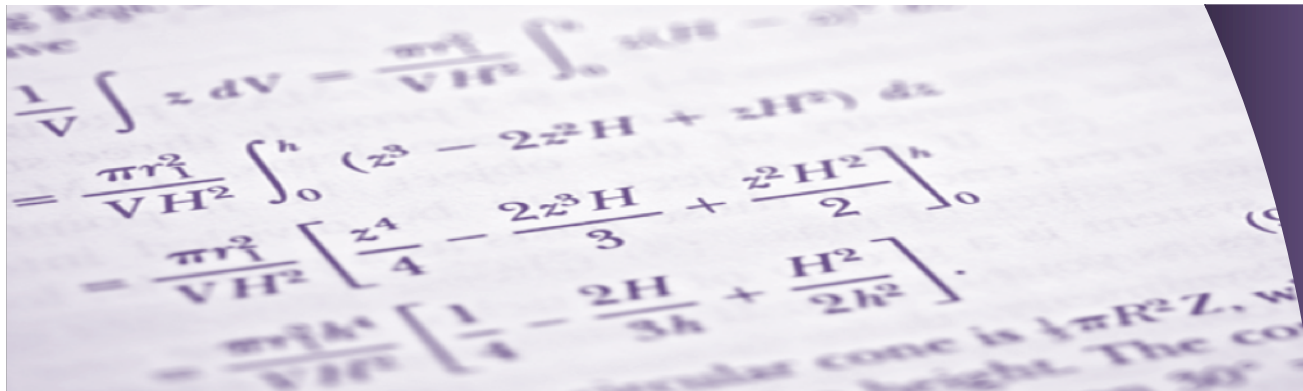
The 83rd Annual William Lowell Putnam Mathematical Competition will be held on Saturday, December 3, 2022, from 9:00 am to noon and 2:00 to 5:00 pm. The questions require different levels of mathematical background, and all require a bit of ingenuity to solve. The scores on the exam are typically quite low, and even answering a couple of questions is considered an excellent performance. The competition is open to undergraduates enrolled in colleges and universities of the United States and Canada who have not yet received a college degree. If you are potentially interested, please e-mail Dr. George Gilbert at g.gilbert@tcu in the next several days and he will send you additional information.

Texas Undergraduate Mathematics Conference at UT Austin on October 28-29

The seventeenth annual Texas Undergraduate Mathematics Conference will be held at the University of Texas at Austin on Friday, October 28 and Saturday, October 29. Registration for the conference is free. Undergraduates who would like to present a talk at the conference must submit an abstract of the talk by October 14.

The featured speakers for the conference are Dr. Alicia Prieto-Langarica from Youngstown State University and Dr. Samuel Ivy from the University of Mary Hardin-Baylor.

For information about the conference, to register for the conference, or to submit an abstract go the website: <http://sections.maa.org/texas/tumc>



Solution to the September 2022 Problem of the Month

Problem: Find all pairs of real numbers that solve $|x| = |y| + |x - y| + |y| \cdot |x - y|$.

Solution: The solutions are $y = 0$ and $x = y$.

By the triangle inequality

$$|x| \leq |y| + |x - y| \leq |y| + |x - y| + |y| \cdot |x - y|.$$

The equality requires $|y| \cdot |x - y| = 0$, hence $y = 0$ or $x = y$. It is easy to check that equality holds in both cases. (The proof holds word-for-word for any normed vector space.)

The Problem of Month was solved by Duc Toan Nguyen.

October 2022 Problem of the Month

A person reads the 361 chapters of Tolstoy's *War and Peace* over 200 consecutive days, each day reading at least one chapter and always reading entire chapters within one day. Must there be a period of consecutive days when the person reads exactly 180 chapters over that period?

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.