

TCU Math Newsletter

"What does it take to be a mathematician? I think I know the answer: you have to be born right, you must continually strive to become perfect, you must love mathematics more than anything else, you must work at it hard and without stop, and you must never give up."

*---Paul Halmos
(from I Want to be a Mathematician)*

November Colloquium Talks

Professor Kaitlyn Phillipson of St. Edwards University will present the first talk of the month in the Frank Stones Memorial Colloquium Series on Tuesday, November 6. Her talk is entitled "What Can Math Tell Us About a Stimulus Space?" The second colloquium talk in November will be presented by Professor E. Cabral Balreira of Trinity University. His talk, "Geometric Methods for Global Stability and Monotonicity," will be on Thursday, November 15.

Both of these colloquium talks will be in TUC 352 from 3:30 to 4:30 pm. TCU students and members of the community are invited to attend the colloquium talks and the refreshments served in TUC 300 during the half hour before the start of each talk.

Information about Mathematics BS and BA Degrees Available on the TCU Math Department Web Page

A detailed and clear summary of the requirements for the TCU BA and BS in Mathematics degree requirements can be found under the current undergraduate students tab on the TCU Mathematics Department web page at

<https://mathematics.tcu.edu>

The web page also includes information about the Actuarial BA and BS degrees, and details about the two different tracks for the BS in Mathematics, advising tips, and a list of planned course offerings for the next four years.

TCU Math Club Talk

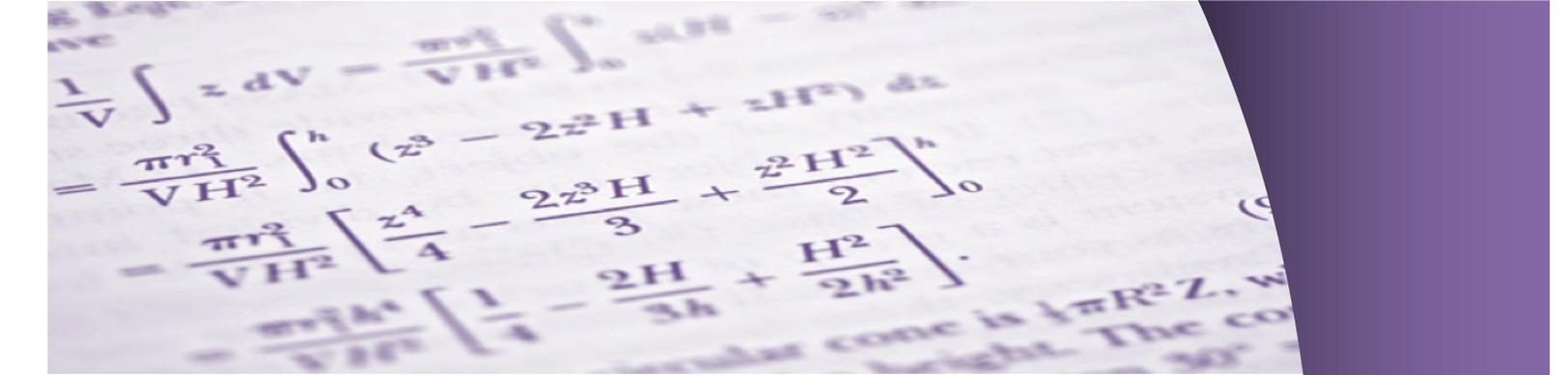
The TCU Math Club meeting on Wednesday, November 14 at 3:30 pm in TUC 244 will feature the talk "Who's the Best? Just Ask the Oracle," presented by Professor E. Cabral Balreira of Trinity University.

In this talk, Professor Balreira will explain the basic mathematical idea of a Google search and how to apply it for sports predictions. He will focus on the mathematics behind rankings systems and how to use Linear Algebra and network theory for the emerging field of sports analytics. He will also introduce a new ranking method called the Oracle method that is a customizable network ranking method, and will illustrate its predictive power for the NFL and NBA.

Nat Hellerman Thesis Defense

TCU mathematics graduate student Nat Hellerman will defend his Ph.D. thesis "Toeplitz Operators with Symbols from Certain Rotation Algebras and their Index Theory" on Monday, November 12 at 3:30 pm in TUC 244.

All students and faculty are invited to attend the defense and also join us for a celebratory reception afterwards in TUC 300.



Solution to the October 2018 Problem of the Month

Problem: Let S be a set with binary operation $*$ having an identity element e satisfying

$$a * e = e * a = a$$

and satisfying

$$a * (b * c) = (a * b) * (a * c)$$

("self-distributivity") for all $a, b, c \in S$. Prove that

$$(a * b) * c = a * (b * c)$$

for all $a, b, c \in S$ (i.e. $*$ is associative).

Solution: Due to Brad Beadle ('96). Note that

$$(a * b) * a = (a * b) * (a * e) = a * (b * e) = a * b = (a * b) * e.$$

It follows that

$$\begin{aligned} a * (b * c) &= (a * b) * (a * c) = [(a * b) * a] * [(a * b) * c] \\ &= [(a * b) * e] * [(a * b) * c] = (a * b) * (e * c) = (a * b) * c. \end{aligned}$$

This month's problem was also solved by Qi An.

November 2018 Problem of the Month

For which positive integers n is it possible to partition the set $\{1, 2, \dots, n\}$ into three subsets such that the sums of the integers in each subset are equal?

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.

Editor: Rhonda Hatcher
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