TCU Math Newsletter

The object of pure physics is the unfolding of the laws of the intelligible world; the object of pure mathematics is that of unfolding the laws of human intelligence.

- James Joseph Sylvester

Actuarial Career Fair at TCU on September 21

On Wednesday, September 21 TCU will host an Actuarial Career Fair in TUC 139 from 12:00 pm to 2:00 pm. Students should dress in business casual and should have already submitted their résumés for the online book by September 14th. For more information, contact Dr. Susan Staples at s.staples@tcu.edu.

Putnam Mathematics Contest

The 77th Annual William Lowell Putnam Mathematical Competition will be held on Saturday, December 3, 2016, 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. For more information about the contest visit http://math.scu.edu/putnam/. Those interested in signing up to take the Putnam exam this year should contact Professor George Gilbert at g.gilbert@tcu.edu by the end of the day on Thursday, September 29.

Frank Stones Colloquium Talks

The Frank Stones Colloquium Series will feature two talks in September 2016. Professor Scott Cook from Tarleton State University will present his talk on Friday, September 16, and Professor Aldo Cruz-Cota from Texas Wesleyan University will present a talk on Friday, September 30. Both talks will be at 3:30 pm in TUC 352.
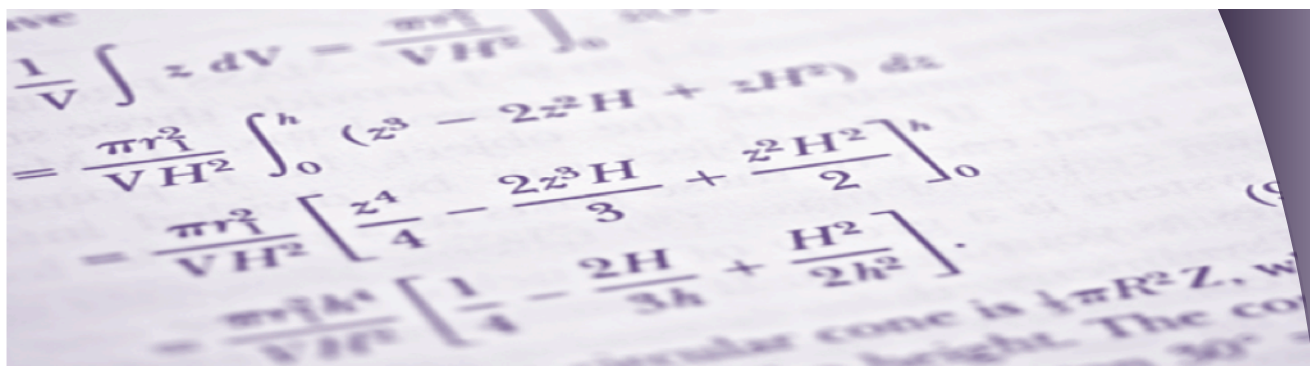
TCU students and members of the community are invited to attend the colloquium talks and the refreshments served in TUC 300 during the half hour before the start of each talk.

SERC Undergraduate Research Grant Applications Due September 29

The TCU Science and Engineering Research Center (SERC) is now accepting applications for the Fall 2016 round of SERC Undergraduate Research Grants. The grants are for up to $1500. The application form and more information about the research grants are available at www.serc.tcu.edu. The application submission deadline is September 27, 2016 at 5:00 pm.

Fireside Forum for Students on Job Searches on September 27

The TCU College of Science and Engineering will hold a Fireside Forum featuring writing résumés, interviewing, and other job search information on Tuesday, September 27 in Sid Richardson Lecture Hall 2. Potbelly sandwiches will be served at 5:00 pm and the speaker panel will be 5:15 – 6:00 pm.

Solution to the April 2016 Problem of the Month

Problem: Let $\lfloor x \rfloor$ denote the greatest integer less than or equal to the real number x and let n be a positive integer. Prove that

$$\lfloor x \rfloor + \left\lfloor x + \frac{1}{n} \right\rfloor + \left\lfloor x + \frac{2}{n} \right\rfloor + \cdots + \left\lfloor x + \frac{n-1}{n} \right\rfloor = \lfloor nx \rfloor.$$

Solution: Let k be the unique integer such that

$$\lfloor x \rfloor + \frac{k}{n} \leq x < \lfloor x \rfloor + \frac{k+1}{n}.$$

Then $\lfloor nx \rfloor = n\lfloor x \rfloor + k$ and $\lfloor x + j/n \rfloor$ equals $\lfloor x \rfloor$ for the $n - k$ values $j = 0, \ldots, n - k - 1$ and equals $\lfloor x \rfloor + 1$ for the k values $j = n - k, \ldots, n - 1$.

September 2016 Problem of the Month

A fantasy football league has 10 teams, split into two divisions of 5 teams each. Each team will play one opponent in each week of the 12-game regular season. Is it possible for the league manager to construct a schedule such that every team plays every team in its own division once or twice and plays every team in the other division exactly once?

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.