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October 2015

TCU Math Newsletter

Mathematics is the handwriting on the human consciousness of the very Spirit of Life Itself.

- Claude Bragon

Fidelity Investments Presentation on October 5 and Second Actuary Talk on October 19

Julie Reyes of Fidelity Investments will present the talk "Understanding Benefits Consulting" on Monday, October 5 at 3:30 pm. In this talk, you can learn how you can put a mathematics degree with an actuarial concentration to work.

A second actuarial talk will be presented by John Kleiser, FSA, EA, and Partner of October Three Consulting, L.L.C. Those attending Mr. Kleiser's talk, "The 'Re-Birth' of Defined Benefit Plans," will learn how a small, entrepreneurial actuarial consulting firm has designed and implemented new defined benefit pension plans for clients. This talk will be on Monday, October 19 at 3:30 pm.

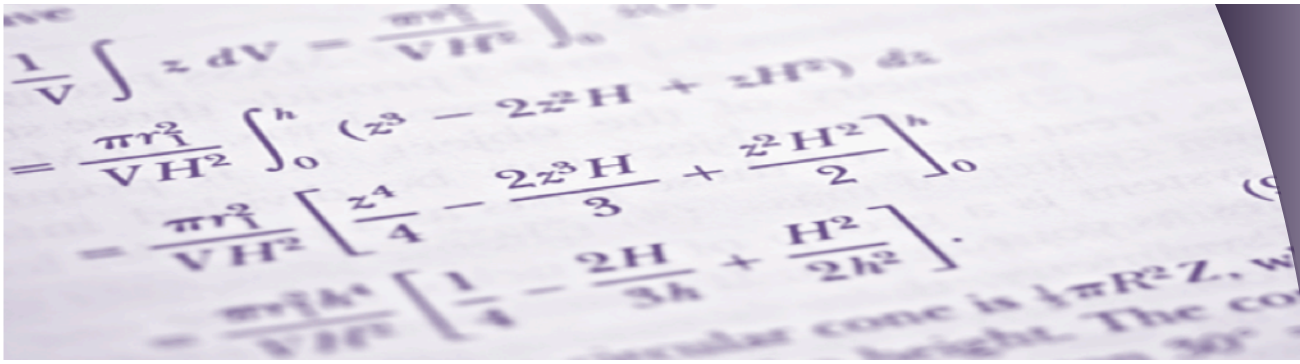
Both talks are in TUC 352, and refreshments will be available before both talks in TUC 300.

Frank Stones Colloquium Talk on October 20

Professor Neil Fullarton from Rice University will be the next speaker in the Frank Stones Colloquium Series. His talk will be on Tuesday, October 20 at 3:30 pm in TUC 352. TCU students and members of the community are invited to attend the colloquium and the refreshments served in TUC at 3:00 pm.

Career Fair for College of Science and Engineering Students on October 7

An Engineering & Technology Career Fair will take place in Tucker Technology Center on Wednesday, October 7 from 10:00 am to 1:30 pm. Students from the College of Science and Engineering should take advantage of this convenient career fair.



Solution to the September 2015 Problem of the Month

Problem: Suppose that the value of an investor's assets either double or are halved each year, each with probability 1/2, not depending on the outcomes in previous years. Find the mean factor by which the investor's assets have changed over a period of n years.

Solution: The probability the investment doubles k times and is halved $n-k$ times is $\binom{n}{k}/2^n$ and so the mean factor is

$$\sum_{k=0}^{n} \frac{\binom{n}{k}}{2^n} 2^k (1/2)^{n-k} = \sum_{k=0}^{n} \binom{n}{k} \left(\frac{1}{4}\right)^k = \left(\frac{5}{4}\right)^n.$$

Solved by Brad Beadle ('96).

October 2015 Problem of the Month

Show that

$$(1-2^{-1})(1-2^{-2})\cdots\left(1-2^{-(n-1)}\right)(1-2^{-n})$$

is greater than ¼ for every positive integer n.

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
Problem Editor: George Gilbert
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