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TCU Math Newsletter

Taniyama was gifted with the special capability of making many mistakes, mostly in the right direction. I envied him for this and tried to imitate him, but found it quite difficult to make good mistakes.

----Goro Shimura

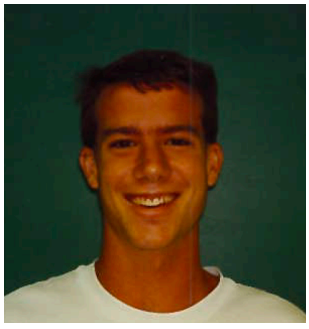
TCU Career and Intern Expo on February 13 and Preparation Workshop on January 30

All TCU students and alumni are invited to attend the TCU Career and Intern Expo on Wednesday, February 13, 2019 from 3:00 to 6:00 pm in the Campus Rec Center. Top employers hiring for internships and full-time positions in a wide range of industries will be at the Expo. To learn more information about and to register for the Career and Intern Expo, visit the web site
https://careers.tcu.edu/event/career-intern-expo/

Gabriela Pineider, a TCU Career Consultant, will hold a preparation workshop for students interested in attending the Expo. The workshop will be held in TUC 139 at 3:30 pm on Wednesday, January 30.

Problem of the Month Solver Brad Beatle Featured on Website

Brad Beatle, who frequently solves the *TCU Math Newsletter* problem of the month, is currently featured on the TCU Mathematics Department website at
https://mathematics.tcu.edu/brad-beadle-96/
Brad graduated from TCU with an engineering and mathematics double major. Pictures of Brad taken in his freshman year in 1992 along with a current picture are shown below.



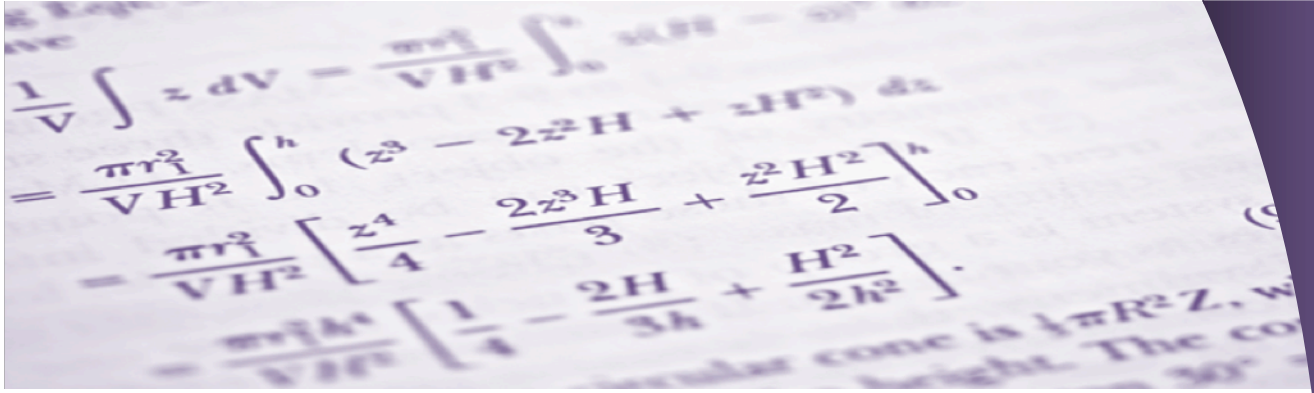
NSF Research Experience for Undergraduates Summer 2019 Programs

The National Science Foundation (NSF) funds summer research opportunities for mathematics undergraduate students through 58 REU Sites across the country. Students are granted stipends and, in most cases, housing and a travel allowance.

A list of Mathematics REU sites where you can find details about the individual programs and the application processes can be found at
http://www.nsf.gov/crssprgm/reu/list_result.jsp?unitid=5044

2019 TCU Student Research Symposium (SRS) Workshops, Poster Software Demo, and Abstract Deadline

TCU College of Science and Engineering undergraduate and graduate students are invited to display their research on a poster at the Student Research Symposium (SRS). The deadline for submitting an SRS poster abstract is Friday, February 22, 2019. The poster electronic submission deadline is March 29. There will be a poster software demo at 3-4 pm on February 8 in SWR 237 There will also be two workshops on how to make and print the posters at 3-4 pm in SWR 238 on February 15 and SWR 239 on February 22. More information about SRS can be found at http://www.srs.tcu.edu.



Solution to the November 2018 Problem of the Month

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

Solution: It is possible for $n = 5, 6, 8, 9, 11, 12, \ldots$. It is necessary that the sum

$$1 + 2 + \cdots + n = \frac{n(n+1)}{2}$$

be divisible by 3, which means n must be a multiple of 3 or 2 greater than a multiple of 3. Clearly, such a partition is impossible for $n = 3$.
We have

$$5=1+4=2+3,$$
$$8+4=7+5=6+3+2+1,$$
$$9+6=8+7=5+4+3+2+1.$$

Any six consecutive integers $k, k+1, k+2, k+3, k+4, k+5$ may be partitioned as

$$k + (k+5) = (k+1) + (k+4) = (k+2) + (k+3),$$

so we conclude every integer listed above is possible.

This month's problem was solved by Brad Beadle ('96) and Qi An.

February 2019 Problem of the Month

What is the largest positive integer $n \geq 3$ such that there exists a polynomial $p(x)$ with integral coefficients such that $p(1) = 1$, $p(2) = 2$, $p(3)=2019$, $p(4)=2020$, ..., $p(n) = n + 2016$?

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
Thought of the Month Editor: Robert Doran