

UNDERGRADUATE MATH SEMINAR

This term, the math department will continue to hold its undergraduate seminar. *However, the day-of-week and the time-of-day will vary more than usual.* Don't worry – the math newsletter will keep you abreast of the seminar schedule. And, you can check the posters around Bailey Hall for more details.

This week's seminar will be in the late afternoon on Friday:

Friday, January 17, 4:45 – 5:45pm in Bailey 207

Refreshments will be served beforehand in the Math Common Room, Bailey 204.

Mark your calendar: next week there will be **two** seminars, Wednesday and Friday, both at 4:45pm.



Four Union Students Participate in 85th Annual Putnam Competition

After training throughout the fall term under the guidance of **Professor Grant Moles**, four Union students, **Nolan Blake, Hunter Gould, Henry Howe, and Talha Khan**, participated in the 85th annual William Lowell Putnam Mathematical Competition.

Widely regarded as both the most prestigious and most difficult collegiate math competition in the world, contestants sit for two three-hour sessions trying to solve six proof-oriented problems in each session. How difficult is this contest? Each problem is scored on a 0-10 scale, so the maximum possible score is 120 points. The Putnam draws thousands of math oriented participants, and the median score is typically 0 or 1 point out of 120! And, according to Wikipedia, there have only been five perfect scores as of 2021.

Want a taste of Putnam? Here is the first session's first problem:

Determine all positive integers n for which there exist positive integers $a, b,$ and c satisfying

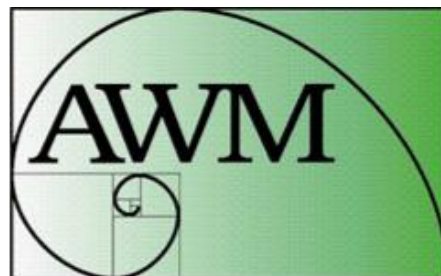
$$2a^n + 3b^n = 4c^n.$$

If you enjoy learning about and working on such problems, reach out to Professor Moles (molesg@union.edu) as the Putnam Exam Preparation squad will continue to meet this term.

For an article about another math/coding contest held during December, turn the page!

Association for Women in Mathematics (AWM) to Meet on Tuesdays

Union's chapter of the Association for Women in Mathematics (AWM) will hold its winter term kickoff meeting this **Tuesday, January 14 at 2:00 in Bailey 204, the Math Common Room.** The plan is to have weekly meetings at this time and location. For more information, attend the meeting(!) and/or contact one of the chapter co-presidents **Audrey Benson** and **Frankie Morone**.



Association for Women in Mathematics

The Advent of Code!

Professor Grant Moles brought another competition to Union students over the month of December: The Advent of Code. Below is based on a description he provided.



<https://adventofcode.com/>

The Advent of Code is an annual coding event every December, and it consists of 50 coding puzzles (two each day from December 1 to December 25). The first puzzle each day is typically more approachable, then the second builds off of it in a more difficult way that requires more thought. Though they are coding puzzles, most of them require some mathematical problem solving to make the input approachable and write code that will terminate in a reasonable amount of time. Each day when the date rolls over (midnight eastern time), a new puzzle is published, and the first 100 people in the world to solve each of the two puzzles is awarded a number of points based on their rank (scored based on time). The people with the most points across the entire competition place on the global leaderboard.

*This year, I [solicited participants at Union] inviting them to join in and enter a private leaderboard to compete against one another. We had six participants, [five students] **Hunter Gould, Talha Khan, Duy Hung Dang, Shane Mullahy, Joseph Cerulli**, and me. Just about everyone completed at least two of the fifty puzzles.*

Hunter performed exceptionally well! As Professor Moles noted,

On the global leaderboard, Hunter fairly consistently scored in the top 100 most days and finished with a global standing of 21st in the world (for context, over a quarter of a million people completed at least one puzzle on the first day). This is especially impressive considering that this year, many of the top finishers each day were openly using AI to quickly complete the puzzles, despite the organizer discouraging the use of LLMs.

Well done!

Free Tutoring in Calculus Courses!

The math department runs a Calculus Help Center (CHC) that offers **free, peer tutoring** in support of its calculus courses: Math 105, 110, 112, 113, 115, 117 and IMP. This is a no-appointment, drop-in service staffed by skilled, patient, and kind upper-class students: **Ananya Gupta, Frankie Morone, Nabeel Naqvi, Jonah Sagarin, Maddie Suitor**, and **Abby Wilder**.

This term, the CHC is open five nights a week, Sunday through Thursday, from 7:30-10:00pm in the Sorum House Seminar Room.

CALCULUS HELP CENTER!

Sunday - Thursday: 7:30 – 10:00pm in the Sorum House Seminar Room