



Goodsell Gazette

Carleton College

6 April 2018

Northfield, MN 55057

The newsletter for the Carleton mathematics and statistics community

Vol. 36, No. 13



Welcome to Spring Term in the Math & Stats Department!

It's finally spring term at Carleton! Although the weather may not feel like it, we hope you're as glad as we are to be back! The final eight weeks of this academic year in the department will prove to be busy and exciting.

Not only are students taking a whole slew of exciting classes (such as Topics in Abstract Algebra and Advanced Statistical Modeling), we are also excited to welcome newly-declared sophomore majors into the department! Other things to look forward to include comps talks, speakers, and the department picnic. Get ready; this spring term is sure to be tons of fun!



A Minor Addition?

Are you majoring (or planning to major) in something other than Mathematics, even though you really dig math, too? Can you bear to be without official recognition of your mathematical work? We think we might have a solution for you: in addition to our major in Mathematics and our major in Statistics, we are now offering a minor in Mathematics. To complete the math minor, you just need to earn 42 credits in courses taken in our department. There are only two restrictions: only courses in our department count (so Budapest courses do not count, and AP credits do not count), and only one Statistics course can count. That stats course cannot be Math 115 or Math 215, but it could be Math 275: for the purposes of the minor we consider Math 265 to be a math course, rather than a stats course. Our minor will not be official until the fall, so current seniors cannot declare a math minor. But everyone else can, and forms are already available from the Registrar's office.

Problem Solving Group

If you have always really enjoyed the problem-solving aspect to your classes, then the problem-solving group is just for you. Come join us in CMC 328 from 4:30-5:30 on Wednesdays, where we will work on

solving some fun and challenging math problems together. All are welcome. There will be a variety of problems available, including some from problem-solving books, some from contests (such as the Putnam), and some from journals.

Rafe Jones will be hosting the session. You can contact him for more information at (rfjones@carleton.edu)

Job for the Summer = Job for the Year

Still looking for that exciting summer job? Well, look no further! Contact Mike Tie (mtie@carleton.edu x4067 cmc305). Mike is looking for three Assistant System Administrators to help him setup labs and classrooms for the upcoming school year. There will be some programming, writing documentation, building web pages, lots of software installations and imaging. Help faculty and summer researchers with anything and everything related to computers. You'll work with Linux, Windows, and OSX. No experience needed; you will be trained as you go. The positions are budgeted for 10 weeks of the summer, and that leaves you time to still enjoy a summer vacation. And best of all, you get to continue working for Mike during the school year.

Work in the Mathematics and Statistics Department Next Year!

Are you interested in getting involved in the Mathematics and Statistics Department next year and need to fill your work-study hours? We are looking for course graders and lab assistants. Applications are due by April 15. For more information and to apply, visit:

https://apps.carleton.edu/curricular/math/resources/student_worker_application/

University of Iowa, Master of Finance

Are you considering a career in Finance? Well, the University of Iowa is launching a new Masters of Finance program this fall and are hoping to recruit qualified students.

For more information, visit: <https://tippie.uiowa.edu/finance-masters>.

Upcoming Events

Week 5, Tuesday, April 24, 3:30pm
Math Across the Cannon Speaker Series, Student Lecture - RNS 410, St. Olaf

Week 5, Tuesday, April 24, 7:00pm
Math Across the Cannon Speaker Series, Jessica Utts- Weitz Cinema

Week 6, Tuesday, May 1, 3:30pm
Math & Stats Majors Welcome - CMC 206

Week 6, Tuesday, May 1, 4:00pm
Comps Announcement Meeting - CMC 206

Job & Internship Opportunities

University of Chicago, Research Assistant

Emanuele Colonnelli at the University of Chicago Booth School of Business is hiring two full-time research assistants to start around August 1, 2018. These full-time RAs will be working on projects in finance and is a great choice for students thinking about working for a year or two before applying to graduate school. This position has been an excellent preparation for Economics PhD programs, with previous participants going on to institutions like Harvard, Berkeley, Stanford, and UChicago. To apply, visit: https://uchicago.wd5.myworkdayjobs.com/External/job/Hyde-Park-Campus/Research-Professional_JR00937.

Federal Reserve Bank, New York

Research Analysts play an integral role in both the policy and research functions of the Research and Statistics Group at the Federal Reserve Bank. Economists, whose specialties include banking and payment systems, capital markets, international economics, macroeconomics, and microeconomics, work closely with Research Analysts. Upon leaving the Fed, Research Analysts who choose to apply to graduate school are consistently accepted by top programs; others pursue a wide variety of public and private sector opportunities. The Federal Reserve Bank is seeking candidates who have records of superior scholarship and academic curiosity. Research Analysts usually come from strong economics, policy, mathematics, or computer science backgrounds. Successful candidates often have previous research experience, and many are considering careers in economic research, public policy, or other related field. To apply, visit: <https://frb.taleo.net/careersection/02bcampus/jobsearch.ftl?lang=en>

Problems of the Fortnight

To be acknowledged in the next *Gazette*, solutions to the problems below should reach me by noon on Tuesday, April 17.

1. Let $ABCD$ be a convex quadrilateral (in the plane). Define P as the point which is equidistant to B , C , and D ; similarly, let Q be equidistant to A , C , and D , let R be equidistant to A , B , and D , and let S be equidistant to A , B , and C . Assuming that these four new points are all different, they form a new quadrilateral $PQRS$. How are the angles of this new quadrilateral related to the angles of the original one?

2. Let i, j, m, n be integers. Then for any nonzero rational numbers x and y , $x^i y^j$ and $x^m y^n$ will also be rational numbers, but the converse may not be true: $x^i y^j$ and $x^m y^n$ might both be rational numbers even though x and/or y is/are not rational. (For example, if $i = 1, j = -3, m = 5, n = 7$, and $x = y = \sqrt{2}$, then $x^i y^j = 1/2$ and $x^m y^n = 64$ are both rational, but x is not rational.) Find a necessary and sufficient condition on i, j, m, n for the converse to be true, so that when i, j, m, n satisfy the condition and $x^i y^j$ and $x^m y^n$ are both rational, it follows that x and y are both rational, whereas if i, j, m, n don't satisfy the condition, there is an example of x and y which are not both rational but for which $x^i y^j$ and $x^m y^n$ are both rational.

Several solvers from afar sent solutions for both problems posed March 9: John Snyder in Oconomowoc, "Möbius Quip", and prospective student Ethan Rojek. Alas, unless I lost track of something, there were no on-campus solutions. Whether you are loving the snow and bright sunshine or pining for "real" spring, if you're a current student, why not also try your hand at a problem or two? Meanwhile, by the time you read this, my own solutions to all the problems posed last term should be up in the hallway outside CMC 217.

- Mark Krusemeyer

Having trouble seeing the problem of the fortnight? Try enabling images for the message.



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