

# Goodσελλ Gazette

Carleton College  
Northfield MN 55057

The newsletter for the Carleton mathematics and statistics community

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## *Colloquium Talk*

Manda Riehl, University of Wisconsin—Eau Claire  
Thursday, October 8, 4:00 pm, in CMC 206

**“Connect The Dots” for mathematicians: The traveling salesman problem and how evolution helps mathematicians.** When playing connect the dots as a child, you followed a couple of rules: 1) Visit every dot, and 2) Never visit the same dot twice. These same rules are applied to certain graph theory problems, and one in particular, the traveling salesman problem, turns out to be hard to solve. Some of our best results have come from imagining possible solutions are organisms which we let evolve according to certain rules. This talk will have audience participation and will be accessible to all!

Manda Riehl is an Assistant Professor at University of Wisconsin—Eau Claire. She does research in algebraic and enumerative combinatorics, and loves teaching environmental mathematics. She graduated from MIT and earned her PhD at the University of California, San Diego.

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## *Last Call for the Putnam!*

As you saw in last week’s Gazette, this year’s Putnam will be held on Saturday, December 5. That’s during our winter break, but we’ll gladly make arrangements for you to take the Putnam at another college or university. Contact Eric Egge in person or via email to sign up, but act now: Eric needs to hear from you by **Monday, October 5!**

## *Welcome to the CMC!*

The Mathematics Department would like to welcome three new faculty members: Jon Armel, Jonathan Hibbard, and Helen Wong. Jonathan will not be joining the Department until winter term, but Helen and Jon are both already teaching at the CMC. This week let’s meet Helen:

**Helen Wong** is joining us from Bowdoin College where she taught for the past two years while renting a house by the sea. Before Maine,

Helen earned her BA from Pomona College, spent a year on a Fulbright in Hungary, and finished her PhD at Yale. Her research interests lie in low-dimensional topology, particularly generalizations of Jones polynomials for knots and 3-dimensional manifolds. This fall she is teaching multivariable calculus, linear algebra, and overseeing a comps group on topology. Outside of the department, she enjoys re-learning how to bike, reading, and studying the harpsichord. Drop by her office and introduce yourself (and ask her if she’s ready for her harpsichord lesson!).

## *Math helps Medicine Fight the Flu*

Mathematicians are playing an important role in preparing for a potential H1N1 flu epidemic. A mathematical model of person-to-person transmission concluded that young children and their parents are most responsible for spreading the flu, and that they should have priority access to the limited vaccines. Federal Health Officials have traditionally recommended

the flu vaccine for children under the age of 5 and adults over the age of 50. For H1N1, however, the Centers for Disease Control and Preventions Advisory Committee on Immunization Practices have decided to adopt the age standards of recent mathematical studies. Priority is therefore being given to school children and adults aged 30 to 39.

### *Quantitative Reasoning through Civics*

The Metropolitan State University in Saint Paul will be host to the Midwest Science Education for New Civic Engagements and Responsibilities Center of Innovation Fall Symposium on Teaching Quantitative Reasoning through Civic Issues. The symposium will be held on **November 6<sup>th</sup> and 7<sup>th</sup>**, including an evening plenary address by Professor Deborah Hughes Hallett (Harvard Kennedy School; University of Arizona). For information check out: [www.sencer.net/Outreach/centers/midwest/index.cfm](http://www.sencer.net/Outreach/centers/midwest/index.cfm)

### *Groton School Teacher-Intern Program*

Groton School, a coeducational boarding school in Massachusetts, is offering a Teacher-Intern Program for college graduates interested in working under supervision to develop the varied skills required of secondary boarding school teachers. The intern's responsibilities include supervised teaching, observation of other classes, and assisted teaching. In addition, interns will help coach athletics and assist in dormitory supervision. Appointments are for one year and carry a salary of \$26,600 plus living quarters and meals in the School Dining Hall. Seniors interested in applying should see Deanna Haunsperger for more details. Applications are due January 8, 2010.

### *Did You Know...*

Did you know that singer Art Garfunkel holds an MA in mathematics from Columbia University? He was on track for his PhD, but joined Paul Simon to pursue a career in music

instead. And before *Desperate Housewives*, Teri Hatcher was a mathematics and engineering major at DeAnza Junior College. If you want to learn more about Michael Jordan's major, or a list of other celebrities' connections to the math world, visit the Rose-Hulman math club website: [www.southalabama.edu/mathstat/info/why\\_math/famous.shtml](http://www.southalabama.edu/mathstat/info/why_math/famous.shtml)

### *PROBLEMS OF THE WEEK*

1. Let  $S_n$  be the sum of the squares of the first  $n$  positive odd integers. Find, with proof, the units

digit of  $S_n$  where  $n = \overbrace{2009^{2009^{2009 \dots^{2009}}}}^{2009 \text{ times}}$ .

2. Let  $g(x)$  be a continuous function. Suppose  $f(x)$  is twice differentiable and satisfies the differential equation

$$f''(x) + g(x)f'(x) - f(x) = 0$$

for all real numbers  $x$ . Show that if  $f(a) = f(b) = 0$  for some  $a < b$ , then  $f(x) = 0$  for all  $x$  in the interval  $[a, b]$ .

Several correct solutions to last week's problems appeared in my mailbox. Li Shunji solved both. Alex Fisher solved the second problem, as did Danny Chen and Rebecca Cordes. "Larch Lover" correctly solved the second problem and pointed out that there were actually several possible scenarios that fit the description given in the first problem. Rebecca Cordes solved one of these variations. Alex won the lottery and should stop by CMC 217 to collect a prize from the B.B.O.P. You can earn a chance to visit the B.B.O.P. by correctly solving one or both of the above problems. As always, to be mentioned in next week's Gazette you have until Tuesday night to turn in a solution.

Gail Nelson

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