



May 2008



# Matters Mathematical

The Newsletter of the Pacific Northwest Section of the Mathematical Association of America

## June 2008 PNW MAA Meeting at Carroll College

### Contents

PNW MAA Meeting.....	1,3,4,5
Pacific Coast Conference.....	2
Oregon Olympiad Medalist.....	3
National Teaching Awardee.....	3
Abstracts for Plenary talks in Helena.....	4
Contributed Paper sessions in Helena.....	5
Minicourses in Helena.....	5
Section News.....	6-8
Editor's Greetings.....	8



This year's PNW MAA meeting will be held at Carroll College in Helena, Montana, June 19 - 21. Registration is now open at <http://math.carroll.edu/PNWMAA/>.

Joe Gallian The invited speakers are Joe Gallian from University of Minnesota-Duluth, Sarah Greenwald from Appalachian State University, and Ivars Peterson from MAA Headquarters. The meeting begins Thursday, June 19 with two afternoon minicourses. Sarah Greenwald is offering a course entitled "Math is Not Only a Young Man's Game." Kelly Cline, Mark Parker, and Holly Zullo, from Carroll College, are offering a course entitled "Active Learning Through Classroom Voting and Clickers."



Friday morning Joe Gallian will speak on "Using groups and graphs to create symmetry patterns." Friday afternoon Sarah Greenwald will present "Good News Everyone! Mathematical Morsels from The Simpsons and Futurama," and our Friday night

Sarah Greenwald

banquet speaker, Ivars Peterson, will give a talk entitled "Soap Bubbles in Math, Science, and Art." Saturday morning Ivars Peterson will deliver the final invited presentation, "A Knotty Tale: From Vortex Atoms to DNA Tangles."



Ivars Peterson

There will be a variety of contributed paper sessions throughout the day on Friday and Saturday morning. We will have special sessions for student presentations, so please encourage your students to attend. Information pertaining to the meeting including registration, paper submission, and lodging is available on the official meeting website:

<http://math.carroll.edu/PNWMAA/>. Questions

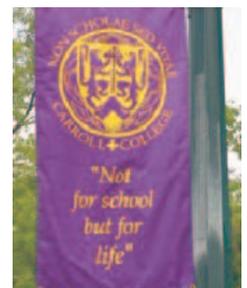


regarding registration/banquet/meals/location/accommodations can be sent to Holly Zullo, [hzullo@carroll.edu](mailto:hzullo@carroll.edu). Questions regarding the program/paper submission can be sent to Chris Hallstrom, [hallstro@up.edu](mailto:hallstro@up.edu).



### Deadlines

Contributed papers:	May 15
Registration: postmarked by	May 31
PNW MAA room rates at the Park Plaza Hotel:	May 28
Dormitory reservations at Carroll College:	June 4



# Third Annual Pacific Coast Undergraduate Mathematics Conference

by Alissa Crans

Students and professors alike enjoyed the 3<sup>rd</sup> annual Pacific Coast Undergraduate Mathematics Conference, which took place on Saturday, April 5<sup>th</sup> at Loyola Marymount University. The conference, which attracted roughly 200 participants, began with a highly interactive session on undergraduate research and opportunities for students within the MAA and Pi Mu Epsilon organizations. During the second half of the morning session, participants were put into groups of 10 to discuss and share ideas regarding math club activities, fundraisers and outreach programs. The results of these small group brainstorming sessions were put on large pieces of paper and displayed throughout the day for all other participants to read. Joe Gallian, the President of the Mathematical Association of America, gave an interesting and energetic keynote address on “Using Mathematics to Create Symmetry Patterns” and also spoke with students about undergraduate research opportunities. A major portion of funding for the conference was provided by the Mathematical Association of America and the Raytheon Company.



The main focus of the conference were two student talk sessions, one in the morning and one in the afternoon, involving 37 student speakers and as many as five concurrent presentations. As in previous years, both students and professors in attendance were extremely impressed with the high quality of the talks given by the students. In addition, a special session was held for freshman and sophomore speakers. Rounding out the conference was a lively panel discussion about career opportunities for math majors and minors and an afternoon prize session in which many great prizes were raffled off to participants and in which student speakers were each recognized with a certificate and a conference T-shirt.



Travel support for this year’s conference was generously provided through a grant from the National Security Agency and students from India (yes, the country!) as well as from the University of Virginia, The City College of New York, and the University of Hawaii were able to attend. We were extremely pleased to welcome students from the Pacific Northwest Section representing Gonzaga University, Lewis and Clark College, Olympic College, Reed College, Seattle Central Community College, and the University of Portland. We look forward to seeing them and others next year!



More information, including photos, from this year’s conference can be found at [www.pcumc-math.org](http://www.pcumc-math.org).



Residue at the North Pole

## 2009 MATHFEST IN PORTLAND

The MAA’s 2009 MathFest will held in Portland, Oregon, August 6-8, 2009. This is the first MathFest in our section since the joint AMS-MAA MathFest in Seattle in 1996. Mark your calendars!

Ken Ross ([rossmath@pacinfo.com](mailto:rossmath@pacinfo.com)) is chair of the Program Committee for this MathFest. The committee’s assignment is to select Invited Speakers and to suggest Invited Special Sessions. Your suggestions will be welcome, provided it is understood that many criteria are involved in these selections and that he is only one of several members of the committee.

## OREGON HIGH SCHOOLER MEDALS IN 2007 USAMO

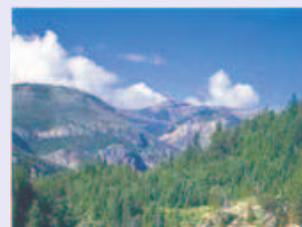
by Ken Ross

Eric Larson is a junior at South Eugene High School in Eugene, Oregon. He was a member of the six-person 2007 International Mathematical Olympiad (IMO) this year, which was held in Hanoi, Vietnam. Eric received a Silver medal. It appears that he is the first Oregon student to represent the United States at an IMO since the U.S. began participating about 32 years ago. In addition to his high school courses, this year Eric is taking the graduate-level algebra sequence at the University of Oregon.

Eric was accepted in last summer's REU (Research Experience for Undergraduates) program at Pennsylvania State University, even though he was a high school student. He was given an interesting unsolved geometry problem posed in 1997, which he solved using mostly elementary but ingenious methods. We expect that the solution will be Eric's first of many research publications.

### Helena, Montana

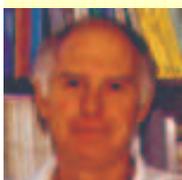
Helena is served by a regional airport with direct flights from Salt Lake City, Seattle, and Minneapolis. Once in Helena, there are a multitude of activities available for everyone. History buffs won't want to miss the Gates of the Mountains tour on the Missouri River, following part of the trail of Lewis and Clark. Also, the local Tour Train provides a wonderful journey through Helena's past as it travels through historic downtown and the mansion district.



The arts culture thrives in Helena with the Holter Art Museum and the Archie Bray Foundation for Ceramics. Helena also boasts several community theater organizations, the Myrna Loy Center for the Arts, and several small shops devoted to various crafts. For the outdoors enthusiast, Mount Helena sits on the edge of town and offers ample hiking opportunities and great views of the city. Finally, two National Parks, Glacier and Yellowstone, each lie within 200 miles of Helena.

## ANOTHER NATIONAL TEACHING AWARDEE IN OUR SECTION

by Ken Ross



Jim Morrow

In January 2008, James (Jim) Allen Morrow, of the University of Washington, was presented with the MAA's Deborah and Franklin Tepper Haimo Award for Distinguished College or University Teaching of Mathematics at the national AMS-MAA meeting in San Diego. This is the premier award for college-level teaching of mathematics; only three are given each year. Jim is the second member of our section to win this award.

Jim received our section's Award for Distinguished Teaching of Mathematics in 2006. An inspiring citation, written by Yves Nievergelt, appears on page 3 of the February 2007 issue of this newsletter, *Matters Mathematical*, which can be found at the website <http://www.math.ubc.ca/~cayf/newsletter.html>.

The national citation, circulated at the San Diego meeting, also emphasized Jim's outstanding success with college and high school students, though Jim modestly responded that, "This award should go to Jim Morrow's students. Any recognition that I have received is due to the performance of my excellent students." Jim's secret is the incredible amount of energy he devotes to extra-curricular activities. He has directed an REU (Research Experiences for Undergraduates) since 1988; he's helped prepare students for the Mathematical Modeling Contest for six years; and he is co-director of the Summer Institute at the University of Washington, a program for high schoolers.

Back in January 2004, Andrew (Andy) Chang-Fung Liu, of the University of Alberta, was our section's first winner of the Haimo Award. He had previously received our section's Award for Distinguished Teaching in 2002. The citation for his award can be found at our section website: [http://www.math.ubc.ca/~cayf/PNWMAA\\_Awards\\_to\\_2007.html](http://www.math.ubc.ca/~cayf/PNWMAA_Awards_to_2007.html).

## Upcoming Events and Conferences

### 2008 PNW MAA Section Meeting

June 19 – 21 at Carroll College  
Helena, Montana

It's almost time for the 2008 PNW MAA meeting, to be held at Carroll College in Helena, Montana, June 19 - 21!

Friday morning Joe Gallian will speak on "**Using groups and graphs to create symmetry patterns.**" He uses video animations to explain how Hamiltonian paths, spanning trees, cosets in groups, and factor groups can be used to create computer generated symmetry patterns in hyperbolic and Euclidean planes. These methods were used to create the image for the 2003 Mathematics Awareness Month poster.

Friday afternoon Sarah Greenwald will present "**Good News Everyone! Mathematical Morsels from The Simpsons and Futurama.**" Did you know that *The Simpsons* and *Futurama* contain hundreds of humorous mathematical and scientific references? What curious mathematical object is used as a bottle for beer in the 31st century? What happens when Homer tries to emulate Thomas Edison? What is the significance of the number 1729? The only prerequisite for this talk is an open mind, so come find out!

Our Friday night banquet speaker, Ivars Peterson, will give a talk entitled "**Soap Bubbles in Math, Science, and Art.**" Artworks dating back to the invention of soap illustrate the wonder of soap bubbles and soap films. Soap bubbles have inspired not only art but also important developments in mathematics and science. Get a fresh perspective on minimal surfaces and their role in art, mathematics, science, and engineering.

Saturday morning Ivars Peterson will deliver the final invited presentation, "**A Knotty Tale: From Vortex Atoms to DNA Tangles.**" The unexpected discovery more than two decades ago of several new ways to distinguish mathematical knots precipitated a surge of interest in knot theory. Today, intriguing links between knots and physics and illuminating biological applications testify to the new importance of a mathematical pursuit that began in the 19th century with the search for a new atomic theory.

There will be a variety of contributed paper sessions throughout the day on Friday and Saturday morning. We will have special sessions for student presentations, so please encourage your students to attend.

### At a Glance

#### Keynote Speakers:

- Joe Gallian (Friday, June 20): "Using groups and graphs to create symmetry patterns."
- Sarah Greenwald (Friday, June 20): "Good News Everyone! Mathematical Morsels from The Simpsons and Futurama."
- Ivars Peterson (Friday, June 20 banquet): "Soap Bubbles in Math, Science, and Art."

#### Minicourses (Thursday, June 19):

- *Women and Minorities in Mathematics*, by Sarah Greenwald
- *Active Learning Through Classroom Voting and Clickers*, by Kelly Cline, Mark Parker, and Holly Zullo

**Local Arrangements Chair:** Holly Zullo,  
[hzullo@carroll.edu](mailto:hzullo@carroll.edu)

**Program Chair:** Chris Hallstrom,  
[hallstro@up.edu](mailto:hallstro@up.edu)

**Conference web page (including registration):** <http://math.carroll.edu/PNWMAA/>

Helena is a great jumping-off place for a family vacation, with Yellowstone National Park and Glacier National Park each less than four hours away. Helena itself boasts many sights of interest, including the Montana Historical Society Museum, the Last Chance Tour Train, and the world-renowned Archie Bray Foundation for Ceramics. Boat rides tracing part of Lewis and Clark's path are offered at the nearby Gates of the Mountains.



## Contributed Paper Sessions at the PNW MAA Meeting in Helena, Montana

- **Issues and Challenges in Applied Mathematics.** Organizers: Marie Vanisko (Carroll College) and John Scharf (Carroll College)
- **Outreach Programs for Underrepresented Populations in Mathematics.** Organizers: Marie Vanisko (Carroll College) and Viji Sundar (California State University Stanislaus)
- **Special Topics Courses for Undergraduates.** Organizers: Nick Willis (Whitworth University) and Donna Pierce (Whitworth University)
- **Action Research in Mathematics Education.** Organizers: Elizabeth Burroughs (Montana State University) and David Yopp (Montana State University)
- **Junior Faculty Research Talks**
- **Research Talks**
- **Student Papers and Undergraduate Research Projects**
- **General Contributed Papers**

For more details on these sessions, please visit the meeting website: <http://math.carroll.edu/PNWMAA/>

To submit your title and abstract for any of these sessions, please e-mail them to Chris Hallstrom ([hallstro@up.edu](mailto:hallstro@up.edu)). Please include the session title in your e-mail.

## Minicourses at the PNW MAA Meeting in Helena, Montana

### Active Learning Through Classroom Voting and Clickers

Kelly Cline, Mark Parker, and Holly Zullo.

Have you ever wished that you could design a lesson that would interact with each and every one of your students on an individual basis? Classroom voting is a teaching technique in which the instructor poses a multiple-choice question to the class, gives the students a few minutes to think and discuss the question, then asks them to vote on the correct answer. In order to vote, every student in the class must play an active role, engaging in the question, forming an opinion, and discussing it with their peers. After the vote, the instructor can hold a Socratic discussion to help students determine the correct answer.

In this minicourse, we will show you how we have used this technique in calculus, multivariable calculus, linear algebra, differential equations, and other classes. We will demonstrate how we have integrated voting into our daily lesson plans while maintaining the same pace, teaching the same syllabi and giving the same types of exams. We will give you the resources necessary to use voting in your own classes, including libraries of classroom voting questions and the latest education research that shows you how to use this technique most effectively.

### Math is Not Only a Young Man's Game

Sarah Greenwald

Have you ever had students who asserted that they do not have the “math gene” or can not do math because they are not a genius? Studies have shown that many people perceive mathematics as a discipline that is done by others rather than people like themselves. In this interactive minicourse we will look at an overview of recent statistics and research studies on perceptions and success in mathematics, including those related to women mathematicians and mathematicians of African descent. We will investigate ways to use these studies to help all of our students connect to mathematics, such as using role models whose style of doing math is identifiable as being similar to the way our students do mathematics. Participants will also have the opportunity to conjecture, throw around ideas, and work on something to take into their own classrooms. There are no prerequisites for this minicourse.

For more detail on these minicourses, please see the meeting website:

<http://math.carroll.edu/PNWMAA/>

## SECTION NEWS

### Alaska

Ron Seater is retiring from **University of Alaska Southeast**. He has been at UAS since 1984.



Ron Seater

Andrzej Piotrowski, who is currently at UC Fresno, will join UAS in the fall of 2008 as Assistant Professor of Mathematics. Andrzej received his B.S. and M.S. in Math at the University of New Hampshire and his Ph.D. at the University of Hawaii where he studied the distribution of zeros of entire functions under his adviser Dr. George Csordas.



Andrzej Piotrowski



### British Columbia

Jimmy Peterson (Benedictine College), Erik Talvila (University College of the Fraser Valley) and Robert Vallin (Slippery Rock University) organised an MAA Contributed Paper Session at the January Joint Meeting in San Diego, titled "Topics and techniques for real analysis." Seventeen speakers gave talks on various aspects of undergraduate and graduate real analysis.



### Idaho

The **University of Idaho** Mathematics Department has had an eventful year. We added three new faculty members this year: Lyudmilla Barannyk (Differential Equations, Numerical Analysis), Rob Ely (Mathematics



Lyudmilla Barannyk



Rob Ely new faculty members over the past two years!

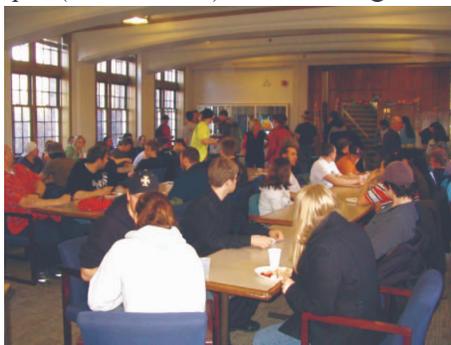
Education), Jennifer Johnson-Leung (Number Theory, Arithmetic Geometry). This makes six



Jennifer Johnson-Leung

We're extremely excited about the achievements of our students. Two honors are particularly deserving of mention. Bryan Wilson, a junior Mathematics major, was awarded the Barry Goldwater Scholarship this year. His research proposal involves a novel approach to investigating the Goldbach Conjecture in number theory. Also, our Putnam Exam team placed 46th this year (out of the 516 participating schools).

Finally, our undergraduate Mathematics Club has sponsored several fun activities. We now have a six-year tradition of celebrating "Pi Day" with a feast of pie (what else?!) and an integra-



Pi Day at the University of Idaho celebration bee. This year's Pi Day Celebration brought in over 90 people to participate in or watch the bee. Other activities at the celebration include working on a "pi paper chain" -- we use loops of paper in ten colors (one for each digit) to make a physical model of the number pi. Construction on the chain continues year-to-year -- it's

currently complete out to 700 digits.



### Oregon

Roger Nelsen is retiring from **Lewis & Clark** this year. He came to Lewis & Clark directly from graduate school at Duke University, where he received his PhD in 1969. He received his BA in 1964 at DePauw University, Phi Beta Kappa.

Dr. Nelsen's MAA activities over the years have included a number of committees, such as the Committee on Sections, the Hasse Prize Committee, the Lester Ford Prize Committee, the Advisory Committee for FOCUS and MAA-Online. He also served on several editorial boards, such as for the Notes series and the Problem Books series, and as an Associate Editor for Mathematics Magazine and for The College Mathematics Journal. He also chaired the Council on Publications, and the MAA has published three books that Dr. Nelsen authored or co-authored. Springer has published a fourth book, "An Introduction to Copulas," now in its second edition.



Roger Nelsen

Plans for retirement include selected projects for Lewis & Clark, such as taking a group of Lewis & Clark students to Seville Spain for spring semester 2009. He also has several unfinished writing projects to work on...plus more time in the sailboat.

**Linfield College** welcomed Xiaoyue Luo to the faculty in the fall of 2007. She received her un-



Xiaoyue Luo

dergraduate education at Beijing Jiaotong University and earned her Ph.D. in applied math from Michigan State University. Her research interests include theoretical and numerical methods for inverse problems, nonlinear Volterra integral equations, local regularization methods, Nero computation problems, and inverse problems in finance. Xiaoyue was named a 2007 National Project NExT Fellow.

Thirteen charter student members worked with chapter advisor Julie Fredericks to prepare and submit a successful petition for the formation of the Oregon Epsilon chapter of Pi Mu Epsilon at Linfield in spring 2007.

During the summer of 2007, Dr. Chuck Dunn worked with two students, Gabe Haberly and Lacy Smith, on a problem in competitive graph coloring. The project, entitled "Competitive Graph



Chuck Dunn

Coloring: The Game Chromatic Number of Trees with 13 or Fewer Vertices," culminated with a complete proof characterizing all small trees via their game chromatic number. Dr. Stephen Bricher worked with three students on applications of nonlinear differential equations: Cassie Kanable looked at the Kaldor Model which attempts to describe the relationship between income and capital stock in terms of gross investment and savings, Bradley Schorer explored the Schrödinger wave equation which is the fundamental mathematical model in quantum mechanics, and Tyler Bryson worked on developing a mathematical

model that will capture the dynamics associated with the interaction between competing species with limited resources. Tyler presented in the Pi Mu Epsilon Session of MathFest, San Jose, August 2007. His talk was *Competition Modeling in Biological Systems*. Tyler won the SIG-MAA Environmental Mathematics Award for his presentation and received an invitation to publish his research in the Pi Mu Epsilon Journal.



Tyler Bryson

**Pacific University** is excited to welcome its newest faculty member, Michael Rowell. Michael is a Number Theorist who received his Ph.D. from Pennsylvania State University.

Pacific University's Mathematics Club celebrated Pi Day with a fund raiser and Pi the Professor Event. To see part of the event, visit <http://www.math.pacificu.edu/~boardman/PiDay.mov>.

The Mathematics Department at **Western Oregon University** held their fourth successful Sonia Kovalevsky Day for high school girls on April 5th 2008. Forty five girls from Newport, Marshfield, Coos Bay, Dallas, Independence, and Corvallis were in attendance. They participated in sessions on secret codes, hexaflexagons, math games and tricks, and a problem solving contest. There was also a teacher session on incorporating discrete mathematics in the classroom.

Laurie Burton, Cheryl Beaver and Klay Kruczek of the WOU mathematics department have received competitive funding from

the Mathematical Association of America to provide a summer training workshop on "Active Learning Approaches and Visual Methods for Teaching the Foundational Mathematics for Elementary Teachers Courses." The PREP workshop, to be offered July 2008, is targeted to college instructors who are new to or are seeking to improve their proficiency in teaching elementary teacher candidates. Participants will experience how a dynamic and carefully guided classroom atmosphere, with appropriate curriculum choices, can improve the learning experience and overall attitude of future elementary school teachers.

Mathematics major Kristal Temple presented a poster "Singularities of Planar Curves" at the Nebraska Conference for Undergraduate Women in February of 2008. Kristal was also accepted to and will be attending the very prestigious summer mathematics program for women undergraduates at Carleton College( see <http://www.math.carleton.edu/smp/> for more information).

Maria Fung from Western Oregon University has accepted a position at Worcester State College in Massachusetts. Her colleagues wish her well in her new job, which meets changing family circumstances, but they will miss her a lot. (They request that the Section ease their pain by pointing some possible replacements for Maria in their direction when they begin hiring next year!)

**Willamette University** will host this year's Oregon Invitational Mathematics Tournament on Saturday, May 17. This annual competition features some of the ex-

ceptional high school mathematics students in Oregon.



## Washington

Dr. Kanchan Mathur has received tenure in the Mathematics Division at **Clark College** in Vancouver, WA. Kanchan



Kanchan Mathur

has a bachelor's degree in mathematics from Delhi University and a masters degree (also in mathematics) and PhD

(operations research) from the Indian Institute of Technology, New Delhi. Before coming to Clark, Kanchan taught at PCC Sylvania and at Delhi University. In addition to teaching, Kanchan is the regional coordinator of the Math Bee (a competition for students in grades 1 - 12) for the North South Foundation, and is well known among her students for putting the "math" in "Mathur."

**Pacific Lutheran University** has hired Ksenija Simic-Muller as a tenure-track Assistant Professor of Mathematics, replacing retiring Associate Professor of Mathematics Celine Dorner. Ksenija writes: "I got my PhD at Carnegie Mellon University in May 2004, had a



Celine Dorner

three-year teaching post-doc at the University of Arizona, and spent the past year teaching part-

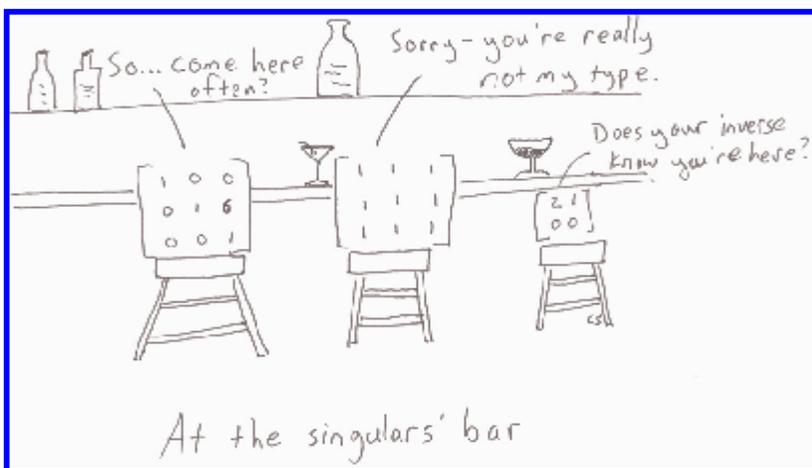
time and parenting full-time. My dissertation was in logic, in the field of Foundations of Mathematics, but I have since transitioned to Mathematics Education, mostly through the work at the Center for the Mathematics Edu-

cation of Latinos/as (CEMELA) while at the University of Arizona. My main hobby these days is my child, but I am also a voracious reader and spend a lot of time on urban hikes with my son."

In other news, PLU Instructor of Mathematics Amy Shell-Gellasch is the creator of the 2008 MAA Ethnomathematics Poster. On behalf of the HOM SIGMAA, a grand unveiling reception of the poster will be held on Thursday, July 31 at Math Fest. Amy writes: "If you are attending Math Fest, please join us." For more information, please contact Amy at [shellgae@plu.edu](mailto:shellgae@plu.edu).

**Whitman College** invites all calculus teachers to examine their freely available ([Creative Commons licensed](#)) calculus book. The book covers a fairly standard course sequence: single variable calculus, infinite series, and multivariable calculus. There is no chapter on differential equations.

The book has been used by five separate instructors at Whitman over the last two years. The content is stable at this point. Professor Guichard adds, "The principal shortcoming is the number of exercises. I am continuing to add exercises as I get the time. Corrections, suggestions and contributions are welcome. I especially would appreciate donations of exercises. If you use the text for a course you teach, please do let me know: [guichard@whitman.edu](mailto:guichard@whitman.edu)." The text itself is available at <http://www.whitman.edu:80/mathematics/multivariable/>



## Editor's Greetings

This seems to be a traditional newsletter box, so here are my greetings! May your semesters end happily and your summers be productive. And remember to register for the PNW MAA meeting in Helena! In case you missed it, the meeting website is

<http://math.carroll.edu/PNWMAA/>

If you have questions, comments, concerns, or contributions, please e-mail me. Happy grading!

Colin Starr, [cstarr@willamette.edu](mailto:cstarr@willamette.edu)