

## UNDERGRADUATE MATHEMATICS SEMINAR

The seminar is on hiatus until the spring. See you next term!

### Winter 2009 Math Final Exam Schedule

<u>Course #</u>	<u>Course Name</u>	<u>Professor</u>	<u>Room</u>	<u>Day</u>	<u>Date</u>	<u>Time</u>
IMP*112*01	Int Math/Physics 2	Niefield, S.	NWSE 112	Thu	Mar 19	12:00 - 3:00 PM
MTH*060*01	Mathematics & Politics	Johnson, B.	BAIL 201	Wed	Mar 18	2:30 - 4:30 PM
MTH*060*02	Mathematics & Politics	Johnson, B.	BAIL 201	Wed	Mar 19	2:30 - 4:30 PM
MTH*101*01	Calculus with Precalc 2	Rosenthal, K.	BAIL 100	Thu	Mar 19	9:00 - 11:00 AM
MTH*101*02	Calculus with Precalc 2	Zwicker, W.	BAIL 100	Tue	Mar 17	9:00 - 11:00 AM
MTH*104*01	Stat Intro: Analysis of Data	Black, K.	OLIN 306	Mon	Mar 16	2:30 - 4:30 PM
MTH*110*01	Calculus 1	Zimmermann, K.	BAIL 100	Mon	Mar 16	2:30 - 4:30 PM
MTH*112*01	Calculus 2	Lesh, K.	OLIN 106	Mon	Mar 16	8:30 - 10:30 AM
MTH*112*02	Calculus 2	Plofker, K.	BAIL 104	Wed	Mar 19	8:30 - 10:30 AM
MTH*112*03	Calculus 2	Blue, J.	BAIL 100	Mon	Mar 16	8:30 - 10:30 AM
MTH*113*01	AP Calculus	Niefield, S.	BAIL 106	Tue	Mar 17	9:00 - 11:00 AM
MTH*115*01	Calculus 3	Wang, J.	BAIL 207	Wed	Mar 19	8:30 - 10:30 AM
MTH*115*02	Calculus 3	Tonnesen-Friedman	BAIL 201	Mon	Mar 16	2:30 - 4:30 PM
MTH*117*01	Calculus 4: Integral Vector	Friedman, P.	BAIL 201	Tue	Mar 17	9:00 - 11:00 AM
MTH*128*01	Probability	Friedman, P.	BAIL 106	Thu	Mar 19	9:00 - 11:00 AM
MTH*130*01	Differential Equations	Wang, J.	BAIL 207	Thu	Mar 19	9:00 - 11:00 AM
MTH*199*01	Intro to Logic & Set Theory	Zwicker, W.	BAIL 102	Thu	Mar 19	9:00 - 11:00 AM
MTH*224*01	Geometry	Lesh, K.	OLIN 106	Tue	Mar 17	1:00 - 3:00 PM
MTH*238*01	Methods of Applied Math 2	Black, K.J.	BAIL 207	Mon	Mar 16	8:30 - 10:30 AM
MTH*340*01	Linear Algebra	Zimmermann, K.	BAIL 106	Tue	Mar 17	1:00 - 3:00 PM
MTH*448*01	Differential Geometry	Tonnesen-Friedman	BAIL 201	Mon	Mar 16	8:30 - 10:30 AM

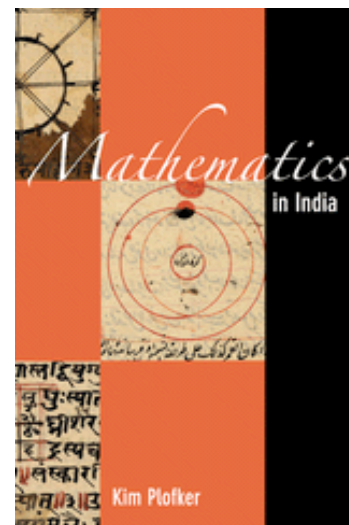
## Last Week of Calculus Help Center Tutoring - Thank you, CHC Tutors!

This last week of classes is the last week that the Calculus Help Center will be open this term, the last night of operation being Thursday, March 12.

Please join the math department in thanking the winter term Calculus Help Center tutors – **Sarah Britton, Ben Miles, Courtney Phillips, Pam Urresta** and **Sam Yoon** – for their contributions to the success of this valuable resource. See you next term!

## Professor Kim Plofker's Book *Mathematics in India* Published

From Princeton University Press: "Based on extensive research in Sanskrit sources, *Mathematics in India* chronicles the development of mathematical techniques and texts in South Asia from antiquity to the early modern period. Kim Plofker reexamines the few facts about Indian mathematics that have become common knowledge--such as the Indian origin of Arabic numerals--and she sets them in a larger textual and cultural framework. The book details aspects of the subject that have been largely passed over in the past, including the relationships between Indian mathematics and astronomy, and their cross-fertilizations with Islamic scientific traditions. Plofker shows that Indian mathematics appears not as a disconnected set of discoveries, but as a lively, diverse, yet strongly unified discipline, intimately linked to other Indian forms of learning.



"Far more than in other areas of the history of mathematics, the literature on Indian mathematics reveals huge discrepancies between what researchers generally agree on and what general readers pick up from popular ideas. This book explains with candor the chief controversies causing these discrepancies--both the flaws in many popular claims, and the uncertainties underlying many scholarly conclusions. Supplementing the main narrative are biographical resources for dozens of Indian mathematicians; a guide to key features of Sanskrit for the non-Indologist; and illustrations of manuscripts, inscriptions, and artifacts. *Mathematics in India* provides a rich and complex understanding of the Indian mathematical tradition."

**HRUMC: Saturday, April 18, 2009 at Union College.**

Contact Sarah Britton ([brittons@union.edu](mailto:brittons@union.edu)) or Ben Miles ([miles@union.edu](mailto:miles@union.edu)) for volunteering opportunities.

### Problem of the Newsletter: March 9, 2009

**Last week's problem:** An  $n \times n$  matrix is called a *Latin square* if each of the integers  $1, 2, \dots, n$  occurs exactly once in each row and column. Find the number of distinct  $4 \times 4$  Latin squares. Try to generalize and find the number of  $n \times n$  Latin squares.

**Solution:** There are  $4! = 24$  ways to fill the first row with 1 through 4. In the column that has a 1, there are  $3!$  ways to fill in 2 through 4. Next, consider the cell in the column and row containing 2. If either 3 or 4 is put into that cell, then there is only one way to fill in the rest of the matrix. If a 1 is put into that cell, there are two ways to fill in the rest of the matrix. Altogether, then, there are 4 ways to finish the matrix. Thus, there are a total of  $24 \times 6 \times 4 = 576$  distinct  $4 \times 4$  Latin squares.

In general, *there is no known formula for the number of  $n \times n$  Latin squares!*

**This week's problem:** Prove there is no equilateral triangle in the plane whose vertices are at integer lattice points  $(x, y)$ . (Problem from *Emissary*, published by MSRI.)

**This is the last newsletter of the term! Good luck on your finals!**