

UNDERGRADUATE MATHEMATICS SEMINAR

There is no seminar during finals week.

Let's give a special **THANK YOU** to **Professor Jue Wang** for organizing this term's seminar.

We look forward to seeing all of you again at the seminar in the winter term!

Calculus Help Center

The last night that the Calculus Help Center will be open this term is Monday, November 17. **THANK YOU** to this term's tutoring staff

- **Sarah Britton**
- **Ben Miles**
- **Nikhil Patel**
- **Courtney Phillips**
- **Pam Urresta**
- **Sam Yoon**

for doing such a wonderful job providing help and assistance to so many students this term.

Math on the Singing Road

As you drive home for the break, think about the following item from the AMS.

A team including musician/mathematician Paul Du Gre worked on "The Civic Project: Musical Road"--a project that developed a rumble strip on a road in Lancaster, CA that when driven over (at 55 mph) sounded like the "William Tell Overture." Du Gre notes that the measured slits in the road (varying grooves) became data to create the tones. The road was paved over so the strip no longer exists, but you can view videos of the Honda commercials that describe the process at <http://automobiles.honda.com/civic-sedan/videos.aspx> (and videos--of the production and the reaction--can also be found on YouTube).

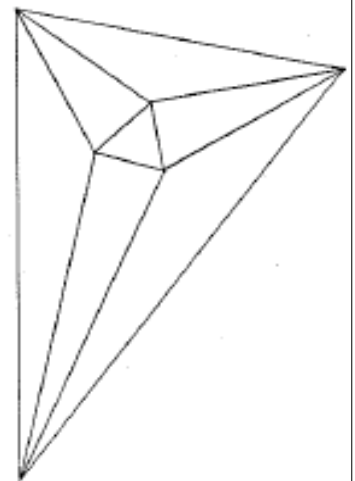
Problem of the Newsletter: November 14, 2008

The most recent PON was (from *The Problem Solving Competition*): How many of the positive factors of the number 36,000,000 are *not* perfect squares?

Solution: Since $36,000,000 = 2^8 3^2 5^6$, every positive factor must be of the form $2^p 3^q 5^r$, where $p \in \{0, 1, 2, \dots, 8\}$, $q \in \{0, 1, 2\}$, and $r \in \{0, 1, 2, \dots, 6\}$. Therefore there are $9 \times 3 \times 7 = 189$ factors. The factors that are perfect squares are precisely the ones whose prime factorizations contain only even exponents. Thus, the factors that are perfect squares are of the form $2^{2j} 3^{2k} 5^{2l}$, where $j \in \{0, 1, 2, 3, 4\}$, $k \in \{0, 1\}$, and $l \in \{0, 1, 2, 3\}$. Therefore there are $5 \times 2 \times 4 = 40$ of these. Finally, we then compute the number of factors that are *not* perfect squares: $189 - 40 = 149$.

December Recess' Problem of the Newsletter: To help keep warm over the December recess, try to prove: *The adjacent pairs of the trisectors of the angles of a triangle always meet at the vertices of an equilateral triangle.* Good luck!

Professor Friedman will accept solutions when you return in January. Email your solution to him friedmap@union.edu or put it in his mailbox in the Math office on the second floor of Bailey Hall.



GOOD LUCK ON YOUR FINALS!

Fall 2008 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*111*01	Int Math/Physics 1	Zimmermann, K.	HUMN 019	Thu	Nov 20	11:30 - 2:30 P.M.
MTH*053*01	Visualizing the 4th Dim.	Cervone, D.	BAIL 201	Thu	Nov 20	2:30 - 4:30 P.M.
MTH*054*01	Number Theory	Friedman, P.	BAIL 100	Fri	Nov 21	9:00 - 11:00 A.M.
MTH*100*01	Calculus with Precalc 1	Taylor, A.	SSCI 104	Thu	Nov 20	11:30 - 1:30 P.M.
MTH*100*02	Calculus with Precalc 1	Taylor, A.	SSCI 104	Thu	Nov 20	11:30 - 1:30 P.M.
MTH*110*01	Calculus 1	Lesh, K.	OLIN 115	Thu	Nov 20	11:30 - 1:30 P.M.
MTH*110*02	Calculus 1	Lesh, K.	OLIN 115	Thu	Nov 20	11:30 - 1:30 P.M.
MTH*110*03	Calculus 1	Plofker, K.	SSCI 104	Thu	Nov 20	8:30 - 10:30 A.M.
MTH*110*04	Calculus 1	Plofker, K.	SSCI 104	Thu	Nov 20	8:30 - 10:30 A.M.
MTH*110*05	Calculus 1	Lesh, K.	OLIN 115	Thu	Nov 20	11:30 - 1:30 P.M.
MTH*113*01	AP Calculus	Black, K.	BAIL 106	Thu	Nov 20	11:30 - 1:30 P.M.
MTH*113*02	AP Calculus	Zimmermann, K.	HUMN 019	Thu	Nov 20	11:30 - 1:30 P.M.
MTH*113*03	AP Calculus	Johnson, B.	NWSE 116	Thu	Nov 20	11:30 - 1:30 P.M.
MTH*113*04	AP Calculus	Wang, J.	BAIL 104	Thu	Nov 20	11:30 - 1:30 P.M.
MTH*115*01	Calculus 3	Tonnesen-Friedman	BAIL 100	Thu	Nov 20	11:30 - 1:30 P.M.
MTH*115*02	Calculus 3	Tonnesen-Friedman	BAIL 100	Thu	Nov 20	11:30 - 1:30 P.M.
MTH*115H*01	Enriched Calculus 3	Zwicker, W.	BAIL 201	Wed	Nov 19	2:30 - 4:30 P.M.
MTH*117*01	Calculus 4	Johnson, B.	BAIL 207	Thu	Nov 20	2:30 - 4:30 P.M.
MTH*117*02	Calculus 4	Barbanel, J.	BAIL 201	Fri	Nov 21	9:00 - 11:00 A.M.
MTH*138*01	Methods of Applied Math I	Wang, J.	BUTR 300	Wed	Nov 19	5:30 - 7:30 P.M.
MTH*197*01	Discrete Math for CompSci.	Niefield, S.	BAIL 102	Wed	Nov 19	2:30 - 4:30 P.M.
MTH*199*01	Intro to Logic & Set Theory	Friedman, P.	BAIL 102	Fri	Nov 21	1:00 - 3:00 P.M.
MTH*219*01	Topics in Discrete Math	Zwicker, W.	BAIL 201	Wed	Nov 19	8:30 - 10:30 A.M.
MTH*336*01	Real Variable Theory	Barbanel, J.	BAIL 104	Wed	Nov 19	2:30 - 4:30 P.M.
MTH*436*01	Topology	Niefield, S.	BAIL 106	Thu	Nov 20	8:30 - 10:30 A.M.