

The Almagest

The bi-weekly newsletter of the Department of Mathematics and Computer Science. Your trusted source for news.

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March 26, 2012

Alma College
Alma, MI 48801

Senior Presentations

The senior presentations continue this week with talks every **Tuesday** and **Thursday** at **4:00** in SAC 109. Please make an effort to attend the talks and support your classmates. Come for refreshments at 3:50.

Tuesday, March 27th

Kelsey Knapp: *The Solution of the Cubic*

Melissa McIntosh: *Heron's Formula*

Tuesday, April 3rd

Matt Boucher: *Chemical Graphs*

Erin Pintek: *The Binomial Theorem*

Tuesday, April 10th

Chris Goepfrich: *The Basel Problem*

Josh Daniels: *Tower of Hanoi*

Ian Rhynard: *Fourier Transforms*

Thursday, April 12th

Chris Welcher: *Pleasing Mashups from Large Music Libraries*

Robert Bixler: *Music Information Retrieval/Recurrent Neural Networks for Use as a Classifier*

Approved Cognates for Math Majors

PHY 121 *Physics I* (prereq = MTH 113 or 121)

CHM 331-332 *Physical Chemistry* (MTH 122)

ECN 317 *Econometrics* (MTH 116)

ECN 318 *Mathematical Economics* (MTH 113 or 121)

BUS 309 *Finance* (MTH 116)

CSC 220 *Data Structures & Advanced Programming Techniques* (MTH 120)

Using Rhythm to Learn Fractions

Having problems grasping the concept of fractions? According to the journal *Educational Studies in Mathematics*, tapping out a beat may help you learn difficult fractions. A school in California where students use a math curriculum called "Academic Music" has scored significantly higher on math tests than their peers who have used traditional methods of teaching fractions.

Academic Music, co-designed by researchers at San Francisco State, is a hands-on program where students use music notation, clapping, and chanting to help third-grade students make the transition to fractions. Learning fractions is one of the most complicated topics in elementary math, and it's a topic that's been shown to affect the understanding of later math concepts.

Hoover Elementary has shown good results from the Academic Music instruction. Half of their third-grade class participated in a six-week Academic Music curriculum while the other half received the traditional curriculum. The students who learned their fractions from the Academic Music curriculum scored fifty percent higher on a fraction test than their other classmates who had the traditional curriculum.

Academic Music helps children connect music notes (such as half, quarter, and eighth notes) to their equivalent fraction size. By clapping rhythms and chanting each note's name, students learn the time value of each note and then are able to learn how to add and subtract fractions by completing worksheets where they can draw each note (or fraction) and adding up the notes at the end of each measure. So, with exams right around the corner, if you're still a little confused on fractions, you may benefit from researching Academic Music for some assistance. *Jon Young*

Math Teacher Scholarship

The Miriam B. Schaefer Scholarship of \$1000 is awarded to students who are enrolled in a teacher education program and have mathematics as a specialty. To be eligible you must: be a *secondary education math major* or an *elementary education math minor*; have junior or senior status in the Fall of 2012; and have a G.P.A. of at least 3.0. Applications are due by **May 15, 2012**. Applications and Scholarship Guidelines are available on the MCTM website www.mictm.org or in the Education Department bay. Contact Ruth Farrier (SAC 237) for more info. farrier@alma.edu

Mathematics Honorary

Pi Mu Epsilon, the Mathematics Honorary, welcomed three new members this spring. They are: **Megan Jurek, Melissa McIntosh, and Samantha Kellogg**. Other members of Pi Mu Epsilon are: **Amy Baranowski, Robert Bixler, Adam Jutila, Joe Merlo, Garrett Rodriguez, Chad Stripling, Matt Stephens, and Dana Wygmans**.

Solution to Previous Problems

The prize for the circle problem was claimed by **Ben Brow**, who submitted the solution

$$c = \frac{ab}{a + 2\sqrt{ab} + b}$$

Correct solutions were also submitted by **Charlie Stack, Dr. Andrew Thall, & Dr. Paul Splitstone**.

In the second problem, **Garrett Rodriguez** was the first to find the flaw with **Charlie Stack, Jon Young**, and **Gwen Greer** following close behind.

$$\begin{aligned} a &= b \\ a^2 &= ab \\ a^2 + a^2 &= a^2 + ab \\ 2a^2 &= a^2 + ab \\ 2a^2 - 2ab &= a^2 + ab - 2ab \\ 2a^2 - 2ab &= a^2 - ab \\ 2(a^2 - ab) &= 1(a^2 - ab) \\ 2 &= 1 \end{aligned}$$

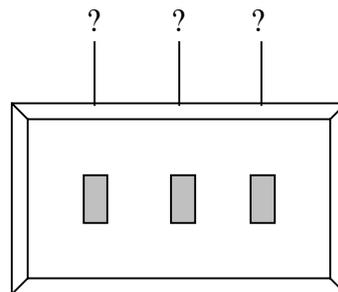
$a^2 - ab = 0$, and
you can't divide
by zero!

Did You Know...

Everyone must take at least two lab courses in the Natural Sciences. Did you know that **CSC 120**, a required cognate for math majors, fulfills one of these two labs?

Problem of the Bi-Week

You are in the downstairs lobby of a house. There are three switches, all in the off position. Upstairs, there is a room with a light bulb that is turned off. One and only one of the 3 switches controls the bulb. You want to discover which switch controls the bulb, but you are only allowed to go upstairs once. How do you do it? (No fancy strings, telescopes, and so on are allowed. You cannot see the upstairs room from the downstairs, and the light bulb is a standard 60-watt bulb.)



A prize of **\$2.00** will be awarded to the **FIRST** student who submits a correct proof to Prof. Sipka.

Student assistant:	Jonathan Young
Faculty advisor:	Tim Sipka
Distribution:	Deb Smith

If you would like to submit an announcement or a short article, please send it via e-mail to Tim Sipka (sipka@alma.edu).