

UNDERGRADUATE MATHEMATICS SEMINAR

NOTICE! There is a **CHANGE** in **DAY** and a **CHANGE** in **TIME** for this week's seminar! **NOTICE!**

In an attempt to accommodate more people's schedules, the seminar will not be held exclusively on Mondays this term. The next meeting of the seminar will be this coming **TUESDAY, April 15th**, with refreshments beginning at **3:45** in the Math Common Room, **Bailey 204**, and the lecture following at **4:00** in **Bailey 207**.

In this seminar, Union College's **Professor Alan Taylor** will be presenting the talk below.

TITLE: The Mathematics of Voting

ABSTRACT: We will give a quick survey illustrating the kinds of mathematical questions and answers that arise from real-world voting systems. Many of these results assert that certain election-theoretic desiderata are impossible to attain. Examples include: a "simple" description of the US federal system, an equally good alternative to majority rule, a fair method of apportionment on which to base the electoral college, and voting systems for three or more alternatives in which honesty is the best policy. Along the way we'll see that sometimes (i) having a vote is just like not having a vote, (ii) a candidate can lose to an opponent that everyone likes less, and (iii) gaining a vote can lead to a loss.

April Is National Mathematics Awareness Month!

Did you know that every year since 1986, April has been designated Mathematics Awareness Month?

From <http://www.mathaware.org/about.mam.html>:

"Its goal is to increase public understanding of and appreciation for mathematics. Mathematics Awareness Month began in 1986 as Mathematics Awareness Week with a proclamation by President Ronald Reagan, who said in part:

"Despite the increasing importance of mathematics to the progress of our economy and society, enrollment in mathematics programs has been declining at all levels of the American educational system. Yet the application of mathematics is indispensable in such diverse fields as medicine, computer sciences, space exploration, the skilled trades,

business, defense, and government. To help encourage the study and utilization of mathematics, it is appropriate that all Americans be reminded of the importance of this basic branch of science to our daily lives."

This year, "[t]he American Mathematical Society, the American Statistical Association, the Mathematical Association of America, and the Society for Industrial and Applied Mathematics announce[d] that the theme for Mathematics Awareness Month 2008 is **Math and Voting**." (From <http://www.mathaware.org/mam/08/>)

Our Math Department is fortunate to have some leading experts in this field. In fact, **Professor Alan Taylor** has authored five books on voting, social choice and fair division. To learn more, go to the seminar on Tuesday!

Math Awareness YouTube Contest

Want to earn \$500? Be clever, be creative, and express your feelings for math for the entire world to see! From

<http://www.mathaware.org/mam/08/youtubecontest.html>

“What does “Math and Voting” mean to you? Unleash your creativity and show millions. The Joint Policy Board for Mathematics* invites you to visit the Math Awareness Month web site at www.mathaware.org and then create a video—to be hosted on YouTube—using music, humor, and other creative elements to express your feelings about the connection between mathematics and voting.

“Here are some videos others have made about mathematics and statistics:

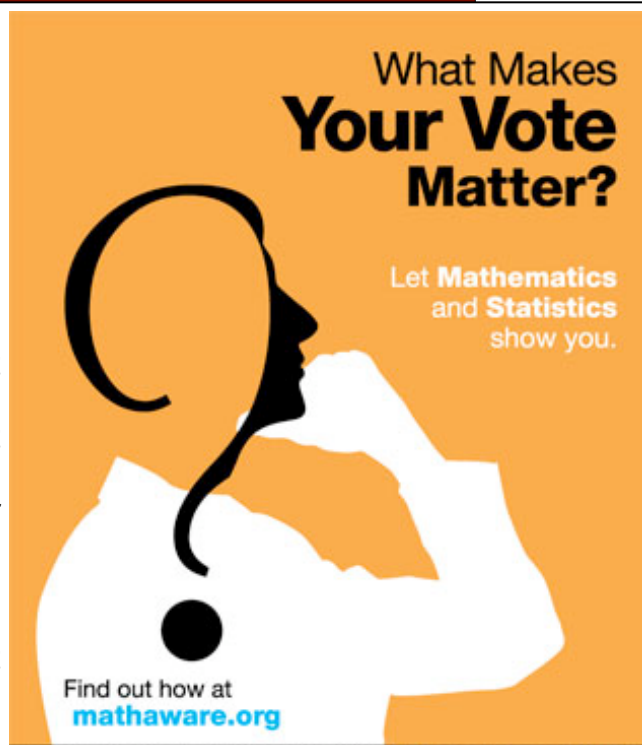
<http://youtube.com/watch?v=xKMxtajvEcw>
<http://youtube.com/watch?v=DSz1xvQ-0R8&feature=related>
http://www.youtube.com/watch?v=UTby_e4-Rhg
<http://www.youtube.com/watch?v=JS9GmU5hr5w>
<http://www.youtube.com/watch?v=r-97jHx7NEI>

“**Contest:** \$500 will be awarded to the producer of the top video. The winner will be announced June 1 on www.mathaware.org and www.amstat.org and acknowledged in *Amstat News* in July.

“What constitutes a “top” video? Judges will choose based on the following:

- Creativity
- How well your message is conveyed
- Level of entertainment
- Quality of your video
- Relevance to the theme of “Math and Voting”

“Please post your video on YouTube at www.youtube.com/group/mathaware. YouTube viewers can vote for their favorite video once a day until the contest ends on May 15. All videos must be posted by April 30 to give viewers time to vote, and each video can be up to three minutes in length.”



Problem of the Newsletter: April 11, 2008

Here is this week’s problem: Last week’s problem didn’t receive any winning responses, so this column will reissue the problem, *along with a hint*. The problem: Show that $\sqrt[3]{\sqrt{5} + 2} - \sqrt[3]{\sqrt{5} - 2} = 1$. The hint: Let $\sqrt[3]{\sqrt{5} + 2} - \sqrt[3]{\sqrt{5} - 2} = x$. Then cube both sides (expanding the left side using the binomial theorem, to ease the computation). Identify x again in your expansion and find a polynomial that has x as a root. Study this polynomial to deduce the result.

Professor Friedman will accept solutions to this problem until 12:00 noon Thursday, April 17th. Email your solution to him (friedmap@union.edu) or put it in his mailbox in the Math Department’s office on the second floor of Bailey Hall.