

The Almagest

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

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Alma College
Alma, MI 48801

Spring Term Courses- It's not too late

It's not too late to register for a spring term course. The Dept. of Math & C.S. will be offering two interesting, upper-level courses this spring.

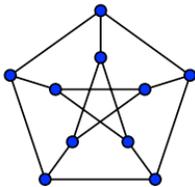
CSC 235 Computer Game Design (Dr. Thall)

This course explores the process by which computer games go from conception through formal design to implementation and testing. The prereq is CSC 220 or permission.



MTH 391 Intro to Graph Theory (Prof. Sipka)

This course introduces the major concepts and applications of graphs, digraphs, and networks. Application areas will include transportation, games, and puzzles. The prereq is MTH 122 or permission.



Important Dates for Seniors

Attention all seniors! Please be aware of the following dates.

February 16: MFAT test – 1st opportunity.

February 17: MFAT test – 2nd opportunity.

March 11: Your paper is due.

March 15: Presentations begin @ 4:00

March 15: Senior dinner @ 5:30



Math Competition on April 9th

The *Lower Michigan Math Competition* will be held on Saturday, **April 9th**, at Hope College. This is a team-oriented competition similar to the MATH Challenge, a competition that we sponsor in the fall term. If you're interested in participating, please see Prof. Sipka.

The Math Club

This term the Math Club will be meeting on **Tuesday evenings** at 9 pm in DOW 132.

Everyone
is
WELCOME!



Among the items on the group's agenda will be planning for this year's PI DAY festivities.

Pi Day: March 14th

Some Interesting Formulas for Pi

$$\pi = \sqrt{6 \cdot \sum_{n=1}^{\infty} \frac{1}{n^2}} \quad \pi = \int_{-\infty}^{\infty} \frac{1}{x^2+1} dx$$

Here's a famous formula by *Leonard Euler*:

$$\pi = 1 + \frac{1}{2} + \frac{1}{3} + \frac{1}{4} - \frac{1}{5} + \frac{1}{6} + \frac{1}{7} + \frac{1}{8} + \frac{1}{9} - \frac{1}{10} + \frac{1}{11} + \frac{1}{12} - \frac{1}{13} + \dots$$

After the first two terms, the signs are determined as follows: If the denominator is a prime of the form $4m-1$, the sign is *positive*; if the denominator is a prime of the form $4m+1$, the sign is *negative*; for composite numbers, the sign is equal to the product of the signs of its factors.

Need Help?

Math tutors are available to help you with the following courses at the times listed.

MTH 112 }
MTH 121 } Monday through Thursday
MTH 122 } 7:00 – 10:00 pm in **Dow L2**

MTH 101 } Tue. 6:00 – 8:00 pm in **SAC 213**
Thur. 7:00 – 9:00 pm in **SAC 213**

Ask Marilyn about Algebra

In December 2015, Marilyn vos Savant responded to a reader's question, **Do you think algebra should be required in our schools?** Here is her response:

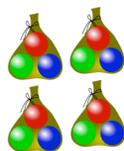


I believe algebra is essential. It's pure logic, and all students need to learn *how* to think, not just *what* to think. When studying algebra, they learn how to reason with facts and without bias. [I'm assuming students learn why various operations should be performed, not only how to perform them, but this is a matter of how well the subject is taught, not whether it should be taught to everyone.]

One can't progress in most sciences without algebra, of course, but let's say we don't mind young people deciding at an early age [algebra starts in middle school] that they don't want to pursue a career that involves math concepts. Should they be allowed to skip algebra? [After all, they'll use little, if any, algebraic formulas in their daily lives.] No, they shouldn't. Studying algebra builds brainpower. Do you go to the gym because you think you're going to use elliptical trainers or rowing machines at work? No, you go there to be more physically fit for everything you do. That's why algebra is so important for all students. It helps them become intellectually fit for life.

Solution to Previous Puzzle

A host and her three contestants each have a bag with three marbles: one each of red, green, and blue. The host randomly draws a marble first, Justin draws next, then Brody, and then Alexa. The first contestant to draw a color that has already been drawn *wins*. Who has the best chance of winning?

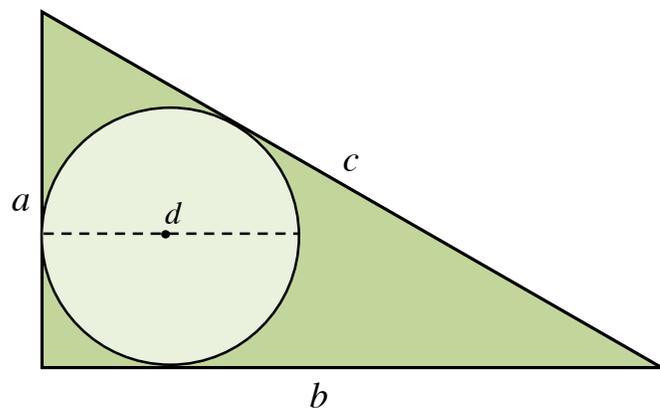


Jake Brower was the winner of the \$2 prize. Justin can win $\frac{1}{3}$ of the time—when he draws the same color as the host. Brody can win $\frac{2}{3}$ of the $\frac{2}{3}$ of the time Justin loses—when Brody draws either the color the host draws or the losing color Justin draws. So, Brody wins $\frac{4}{9}$ of the time. Alexa wins the remaining fraction of time, which is $\frac{2}{9}$. So, *Brody* has the best chance of winning.

Puzzle of the Bi-week

In a right triangle, c is the length of the hypotenuse, a and b are the lengths of the two legs, and d is the diameter of the inscribed circle.

Prove that $a + b = c + d$.



A prize of **\$2.00** will be awarded to the 1st student who submits a correct solution to Prof. Sipka.

Student assistants: Christine Wiersma/Jacob Blazejewski
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).