

# 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

## ***Math Colloquium on TUESDAY!***

The first examples of functions introduced to us in junior high are polynomials. They simply consist of combinations of addition and multiplication. We later meet trigonometric, exponential, and logarithmic functions, whose connections to addition and multiplication are less clear. Calculus, however, allows us to tie together these two sets of functions. How strong is that bond? **Dr. Jimmy Peterson**, Visiting Assistant Professor of Mathematics, will answer this question at the next math colloquium. The next colloquium will be on **TUESDAY**, December 3<sup>rd</sup>.

*“Good Functions, Bad Functions,  
and Good-Bad Functions”*

Date: **Tuesday, December 3<sup>rd</sup>**

Time: 4:00

Place: SAC 113

***Refreshments at 3:50***

## ***NOW is the time to think about an REU***

Have you thought about going to grad school to study math or computer science? Would you like to “test the water” and see if grad school might be the right thing for you? If you’re a *junior* wrestling with these questions, then please consider applying for a summer REU (Research Experience for Undergraduates). This is a great opportunity to spend 7 or 8 weeks of the summer working on some interesting project in math or c.s. And to make it even more attractive, you’ll receive a stipend of approximately **\$3000** in addition to free room and board. There are many REU’s dealing with a wide variety of topics. Please check out the topics and deadlines for applying at the following website: [www.ams.org/employment/reu.html](http://www.ams.org/employment/reu.html)

## ***Should Algebra II be required in H.S.?***

Algebra II courses have long been the bane of high school students, but is there a good reason for students to be studying functions of hyperbolas and basic trigonometry? It is true that Algebra II is quickly becoming a nonnegotiable requirement for a college degree and, for some states, a high school diploma, but a growing number of voices are calling for a reevaluation of Algebra II requirements.

Those in opposition to Algebra II requirements in high schools claim that forcing students to jump the hurdle of Algebra II contributes to drop out rates, breeds a societal resentment of mathematics, and fails to provide the gains in quantitative and mathematical reasoning proponents of setting a high bar for mathematics claim. While some of these claims may be a bit exaggerated, the core argument may hold validity. When will the average students use the equation for an ellipse or the law of sines outside of their math classroom? Perhaps knowledge of the formulas and algorithms taught in Algebra II are not determinate of students' future success.

This is not to say that mathematics is not a vital component of students' education, but rather that a different approach might yield better results. Building a core curriculum based on applying knowledge and reasoning to real problems rather than simply memorizing algorithms could yield students who enjoy rather than abhor mathematics, and who are prepared to apply mathematical and logical reasoning to problems that require more than solving for  $x$ . For more info on this topic, check out the following websites.

<http://nyti.ms/1emnGFa> and <http://bit.ly/17zhQyv>

*Katie Krauss*

## The Math Club

The Math Club meets **EVERY WEDNESDAY**  
at **9:15 pm** in the Wright Hall lobby.

*Everyone is invited!*

### Cheesy Math Jokes

- $\left(\lim_{x \rightarrow 8^+} \frac{1}{x-8} = \infty\right) \Rightarrow \left(\lim_{x \rightarrow 3^+} \frac{1}{x-3} = \omega\right)$
- Why are open source statistical programming languages the best? Because they *R*.
- A physicist, a biologist, and a mathematician are sitting on a bench across from a house. They watch as two people go into the house, and then a little later, three people walk out.

The physicist says, "The initial measurement was incorrect."

The biologist says, "They must have reproduced."

And the mathematician says, "If exactly one person enters that house, it will be empty."

- Infinitely many mathematicians walk into a bar. The first says, "I'll have a beer." The second says, "I'll have half a beer." The third says, "I'll have a quarter of a beer." The bartender pulls out just two beers. The mathematicians complain, "That's all you're giving us? That won't be nearly enough." The bartender says, "Come on. *Know your limits.*"

### Solution to Previous Problem

Without the aid of any type of calculating device, find the sum of the **DIGITS** of all the numbers in the sequence

1, 2, 3, 4, 5, 6, 7, 8, ... , 10000.

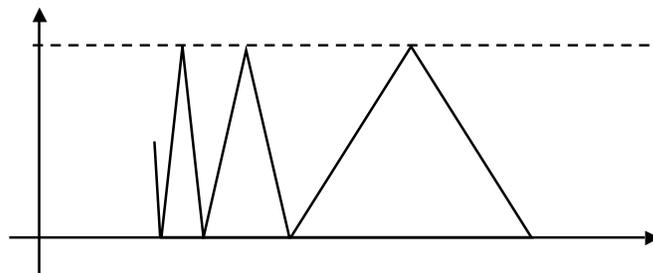
For example, the sum of the **DIGITS** in the sequence 11, 12, 13 is 9.

**Jake Brower**, a sophomore English major who's currently taking MTH 121, was the winner of the \$2 prize. His answer was 180,001. **Drs. Thall** and **Putz** also submitted correct answers.

### Puzzle of the Bi-week

Here's a problem the senior math majors should like: it's one of the practice problems for the math MFAT (major field achievement test), a test all seniors are required to take.

A portion of the graph of a continuous, nonnegative function  $y = f(x)$  is shown below, where  $f(0) = 0$  and  $f(\frac{1}{n}) = 0$  for each integer  $n$ . If the graph of  $y = f(x)$  between  $x = \frac{1}{n+1}$  and  $x = \frac{1}{n}$  is an isosceles triangle of height 1 for each positive integer  $n$ , then what's the value of  $\int_0^1 f(x) dx$ .



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

Student assistant:	Katie Krauss
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).*