The Almagest

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

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Next Colloquium – Thursday, Oct. 17th

Our next colloquium will be presentation by Dr. Steuard Jensen, associate professor of physics at Alma. Dr. Jensen's talk is entitled "Geometry is the Fabric of the Universe."

Einstein's greatest achievement was his theory of gravity, General Relativity. It is the most mathematically elegant idea in all of physics: rather than simply using mathematical tools to model nature, it claims that the fundamental fabric of the universe IS a mathematical object. Space-time is a dynamical curved surface (more precisely, a "4-dimensional Lorentzian manifold") as described by differential geometry. With physical experience as our inspiration, we will take a first look at the mathematics of curvature. ~ *Dr. Jensen*

(To go deeper, take PHY 380 in Winter 2020!)

"Geometry is the Fabric of the Universe"

Date: **Thursday, October 17th**
Time: 4:00
Place: SAC 113

Refreshments at 3:50.

Remaining Math & C.S. Colloquia

Oct. 29: **Dr. Carl Lee** (Central Michigan U.)

Nov. 13: **Dr. Garry Johns** (SVSU)

Nov. 26: **Dr. Andrew Thall** (Alma College)

All talks begin at 4:00, location TBA.

Math Challenge – November 2nd

You are invited to participate in the 25th annual MATH Challenge, held on **Saturday, November 2nd**. The **MATH Challenge** is a *team-oriented*, 3-hour exam consisting of ten interesting problems dealing with topics found in the undergraduate math curriculum. Teams consist of 2 or 3 students, and you'll take the exam on campus from 9:30 am to 12:30 pm. You may form your own team or you can simply be placed on a team. Before the exam, you'll be provided with a "hearty breakfast" of bagels, donuts, and juice. If you're interested, contact Professor Molina.

Math Club

The Math Club meets **EVERY TUESDAY** at 9:00 pm in Dow 132.

Everyone is welcome!

Mathematical Superstitions

As mathematics has developed throughout the years, there have been a number of instances of superstitions. Mathematicians have come across a number of oddities, often confusing many mathematicians, and outright frustrating others by their existence. These are ideas that seemed so outrageous to early mathematicians that many of them were discarded or looked on as inferior until later mathematicians took up the problems for themselves.

One of these major oddities is negative numbers. The Ancient Greek mathematician Diophantus considered negative numbers to be false, and that any equation that required a negative solution was useless. This sentiment continued well after the Greeks, perpetuated by mathematicians such as Leibniz who, despite agreeing that they were useful in calculations, still considered negative numbers to be invalid. It wasn't until the mid 19th century that Western mathematicians fully embraced the reality of negative numbers. However, even today there is a certain hesitation around negative numbers. When we examine Euler's Identity: $e^{i\pi} = -1$, most people will be introduced to the form $e^{i\pi} + 1 = 0$, so that the negative number is not present.

Negative numbers were not the only idea shunned by early mathematicians. Imaginary numbers, hyperbolic geometry and many other ideas were also pushed off to the sidelines as being absurdities that did not require further exploration. Many of these ideas took hundreds of years before serious study was put into figuring out their behaviors. How much further could we be if early mathematicians decided to tackle these challenges head on, rather than simply brushing them off? Every mathematician should take the opportunity to explore the oddities they find, to figure out what exactly is going on. Sometimes these occurrences are simply errors, but who knows how important some small oddity could be? ~ *Brandon Hart*

Solution to Previous Puzzle

A Mini Rubik's Cube has dimensions 2x2x2. An ant is walking from one corner to the opposite corner and chooses to walk only along the edges of the smaller 1x1 faces that make up the exterior of the cube. How many different paths of length 6 units are there for the ant to take?

There were no solutions submitted for the previous puzzle. There is now a **$5.00** reward for solving this problem! You may use a mathematical argument or computer code to compute the answer.

Puzzle of the Bi-week

A number has the very special property that when it is divided by 2, 3, 4, 5, or 6, the remainder is 1, but when divided by 7 the remainder is 0. Find the smallest positive number that satisfies these conditions.

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

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

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