Abstracts of Faculty Talks

Mathematical Association of America
Allegheny Mountain Section Meeting
Edinboro University of Pennsylvania
Saturday, April 10, 2021

10:15 - 10:30 a.m.

Boon Ong, Penn State Erie, Faculty Talks Room 1
Average Directional Distance to the Boundary in an n-Disk
We wish to find the average distance to the boundary of D over all points in D averaged over all directions. In other words, if one takes a random point p in D and a random angle, what is the distance from p to the boundary of D along the ray from p with the given angle?

Laura Shevlin, Hawkes Learning, Faculty Talks Room 2
Step-By-Step Software-Guided Mathematical Problem Solving
Explore Hawkes' mastery-based homework and testing software, featuring over 43,000 unique algorithmically generated question iterations and the powerful LaTeX-based Question Builder tool, allowing instructors to create their own questions! Discover how software can provide pinpointing, error-specific feedback, recognize alternative equivalent answers, and teach students through interactive step-by-step problem-solving tutorials with detailed explanations of the solution process. Save time with automated grading and receive detailed analytics on question-based performance, time on task, and assignment completion to track student success and intervene at crucial learning points. Learn about other algebra sequence, calculus and statistics resources, including short example videos, concept overview videos, and immersive and challenging chapter projects based on real-world applications of course material. All attendees will be entered to win one of three $25 Amazon gift cards!

Shelly Bouchat, Indiana University of Pennsylvania, Faculty Talks Room 3
Double Trouble and Domino Tilings
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10:35 a.m. - 10:50 a.m.

Attou Miloua, California University of Pennsylvania, Faculty Talks Room 1
To receive the COVID vaccine or not: The impact of vaccine education in controlling the outbreak in the USA.
The coronavirus spread is still posing a significant challenge to all citizens in the United States and all humans globally. Many efforts have been made to develop vaccines to combat this virus. However, with the arrival of the COVID-19 vaccine, there is hesitancy and a mixed attitude of getting immunization among some individuals. This talk will present a mathematical model developed to analyze and investigate the output of education on individuals unwilling to get vaccinated. The talk will also show the effect of the vaccine on the coronavirus outbreak in the US.

Anne Quinn, Edinboro University, Faculty Talks Room 2
A Mathematical Analysis of Social Math
Although surfing social media sites is a favorite recreational pastime for many, the mathematics behind social media is even more interesting. I will discuss a variety of mathematical topics from my March 2018 Mathematics Teacher article on this topic, from simple multiplication rules to logarithms and exponents to network-encoded matrices. Topics will include: an analysis of big data sets for different platforms (Facebook, LinkedIn, and Twitter), the algebra behind viral posts, the reason so many people feel unpopular, and the social distance from you to anyone else in the world.

Roger Wolbert, Edinboro University , Faculty Talks Room 3
Incoming College Freshmen: What's Expected?
Do you ever wonder how college math classes might look different with the incoming freshmen class having spent their entire senior year learning math during a pandemic? Students and faculty are invited to join the discussion on our expectations (and our preparations) in the upcoming academic year.

10:55 - 11:10 a.m.

Tom Cuchta, Fairmont State University, Faculty Talks Room 1
What is a Meijer G function?
The Meijer G functions are an enormous class with some incredible properties, but their definition initially appears difficult to unravel. In this talk, we will learn how to understand what they are using pictures in the plane. We will also see how some common functions in undergraduate mathematics have a representation as a G function. No prior knowledge of complex calculus will be needed or assumed!

Victoria Czarnek, University of Pittsburgh at Johnstown, Faculty Talks Room 2
Better Math Assessments in the Age of Remote Learning
Changing our lectures from in-person to remote presentation involved learning new technology, but it didn't necessarily require us to write new lectures. Assessments, however, are another matter. How can a fair math exam be written for remote administration when almost every math problem can be found with step-by-step solutions online? Examples of websites students can consult and techniques for writing better online assessments will be discussed.

Jared Burns, Seton Hill University, Faculty Talks Room 3
Lessons From Mentoring Student Research
If you're like me, you put in around a decade of schooling to become a researcher yourself–then started in academia with no training on how to mentor undergraduate students in their research. In this talk the speaker will share personal suggestions from early career experiences. The goal is to give practical ideas for recruitment and starting a research group, building a routine, organizing meetings, dealing with difficulties, and incorporating research into undergraduate classes.

11:15 - 11:30 a.m.

Bismark Oduro, California University of Pennsylvania, Faculty Talks Room 1

Why low-risk individuals need to protect themselves to keep high-risk people safe from the COVID-19 outbreak.

This talk will present a mathematical model of COVID-19 among two subgroups: low-risk and high-risk populations with two preventive measures. Those with underlying chronic diseases and the elderly (ages 60 and above) are classified as high-risk individuals and the rest as low-risk individuals. The talk will show results that non-pharmaceutical interventions by high-risk individuals significantly reduce infections among only high-risk individuals. In contrast, non-pharmaceutical interventions by low-risk individuals have a significant reduction in infections in both subgroups.

José Contreras, Ball State University, Faculty Talks Room 2

GeoGebra as a Tool to Facilitate Solving Geometric Problems

In this presentation I illustrate how learners can use GeoGebra as a tool to facilitate solving geometric problems. In particular, I will explore the picnic problem (a version of Viviani's problem): Three towns are the vertices of an equilateral triangle. The sides of the triangle are the roads that connect the towns. A picnic area will be constructed such that the sum of its distances to the roads is as small as possible.

1. What are all the possible locations for the picnic area?
2. For practical reasons, what is the best location for the picnic area? Justify your response.

Melanie Baker, Edinboro University, Faculty Talks Room 3

Methods for the Future Elementary School Teacher

Whether you teach future mathematics educators, you wish to be a math educator, or if you have found yourself teaching mathematics to your elementary school kids at home, this talk might give you some innovative ways to teach the fundamental concepts. Having a multitude of approaches for helping students understand traditional, crucial math skills can help teachers of all kinds!