**UOG 13th MATH DAY**

**University of Guam, April 27, 2024**

**UOG CLASS Lecture Hall**

**PROGRAM:**

 **8:00 – 8:30** Registration

 **8:30 – 8:45** Opening Remarks

 **8:50 – 10:10 MATH QUIZ COMPETITION Category 1 (Basic Algebra/Geometry/Statistics)**

**10:10 – 11:30 Category 2 (PreCalculus/Calculus)**

**11:30 – 11:45** Break and Refreshments

**11:45 – 12:45 LECTURE: Dr. Jennifer Balakrishnan (Boston University)**

**12:45 – 13:00** Presentation of Awards and Final Remarks

**MATH QUIZ COMPETITION**

Teams from individual high schools will be asked to solve math problems and trivia questions in front of a live audience present at the event. Teams are provided with pencils and papers but are not allowed to use a calculator. Each high school can enter up to **FOUR** teams for each of **Category 1 & 2** described above. Each team consists of **TWO** students. If there are too many entries, we might select **less than FOUR** teams from the order in the entry form (so consider ranking). One student can enter **ONLY ONE** of Category 1 & 2.

There will be 3 or 4 rounds in each category. In each round teams will answer 6-8 questions. **ALL TEAMS WILL JOIN THE FIRST ROUND** and then in each round there will be an elimination of teams. The number of rounds depends on the number of teams who participate. For example,

First round: 20 teams 🡪 10 teams

Second round: 10 teams 🡪 5 teams

Final round: 5 teams 🡪 Determine the 1st, 2nd and 3rd winners who receive the prize.

**LECTURE**

**Title: One Hundred Years of Elliptic Curves**

**Dr. Jennifer Balakrishnan, Boston University, USA**

Abstract: An elliptic curve can be defined using an equation of the form y^2 = x^3 + ax + b. The solutions to these equations have a lot of structure, and in 1922, Mordell proved that the set of rational solutions is an important algebraic structure known as a group. Since then, elliptic curves have played a crucial role in mathematics, from the theoretical (for instance, in the proof of Fermat's Last Theorem) to the practical (in modern-day cryptography). We will describe the last hundred years of work on these curves, including a million-dollar prize problem from the 1960s that remains open. We will conclude with how machine learning has added a new angle to the study of these curves, with a computation that led to a new discovery in 2022.

**Profile of Dr. Jennifer Balakrishnan**

 Jennifer Balakrishnan is the Clare Boothe Luce Professor of Mathematics at Boston University. She received an AB and AM from Harvard University and a PhD in Mathematics from MIT. Balakrishnan was an NSF Postdoctoral Fellow at Harvard, a Titchmarsh Research Fellow at the Mathematical Institute of the University of Oxford, and a Junior Research Fellow of Balliol College, Oxford. She is the recipient of a Sloan Research Fellowship, an NSF CAREER award, the AWM-Microsoft Research Prize in Algebra and Number Theory, a Simons Fellowship, and the AMS Birman Fellowship. Balakrishnan is a Fellow of the AMS and AWM.



**UOG 13th MATH DAY – ENTRY FORM**

Please register your students **NO LATER THAN Wednesday, April 17, 2024**

ONLY ONE ENTRY FORM per high school

**Name of High School**

**Name of Teachers**

**Name of Team Members for Quiz Competition**

**Category 1 (Basic Algebra/Geometry)** FOUR teams (priority given to the teams with less numbers)

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| --- | --- | --- |
| **1** |  |  |
| **2** |  |  |
| **3** |  |  |
| **4** |  |  |

**Category 2 (PreCalculus/Calculus)** FOUR teams (priority given to the teams with less numbers)

|  |  |  |
| --- | --- | --- |
| **1** |  |  |
| **2** |  |  |
| **3** |  |  |
| **4** |  |  |

**Name of other students who will attend Math Day**

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| --- | --- |
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Students who do not participate in the Math Quiz Competition are encouraged to attend and observe Math Day. Teachers may register students for the Math Quiz Competition and/or participate as an audience member for Math Day.

Please send this ENTRY FORM to both e-mail addresses below. If you need more information, also contact:

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