



Cornell University

K-12 Education and Outreach, Mathematics Department

MATH 5080

Mathematics for Secondary School Teachers

November 15, 2014

9:00 am – 2:30 pm (lunch provided)

406 Malott Hall

8:45 – 9:00 am **Bagels & Juice (provided)**

9:00 – 9:15 am **Introductions**

9:15 – 10:35 am **Dollar Games on Graphs**

We study a simple game on finite graphs. The basic setup is quite elementary: Start with an initial configuration of dollars (integer numbers) on vertices. In each step, you are allowed to select a vertex and then lend one dollar to each of its neighbors, or borrow one dollar from each of its neighbors. The mathematical structure arising from this process is very rich and beautiful, and it relates to a wide range of mathematics.

Speaker: Farbod Shokrieh (Cornell University)

10:40 am – 12:00 pm **The Role of Mathematics in Understanding the Earth's Climate**

What is climate and how is it different from weather? How was the greenhouse effect discovered? How much of the Earth was covered in ice during the ice ages? Mathematics is essential to understanding these questions and their answers. We will discuss the historical importance of mathematics in climate science, as well as the mathematical insights that are important to current climate research.

Speaker: Andrew Roberts (Cornell University)

12:05 – 12:35 pm **Lunch (provided)**

12:40 – 2:20 pm **Using Irrational Numbers to Develop Concepts of Limits,
Continuity, and Convergence in Middle Grades and Algebra**

During this session we will explore how simple questions about adding and multiplying irrational numbers help students develop a practical understanding of limits and continuity.

Speaker: Maria Terrell (Cornell University)

2:25 – 2:30 pm **Closing**

RSVP by Thursday, November 6, 2014

Registration Form: <https://www.math.cornell.edu/m/Community/5080#form>

Questions? Contact Mary Ann Huntley

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