KUTZTOWN UNIVERSITY OF PENNSYLVANIA
DEPARTMENT OF MATHEMATICS

COLLOQUIUM

3:30 P.M.

MARCH 30, 2010

LYTLE HALL 228

The Challenge of Extreme Mental Mathematics

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ABSTRACT

Each year, thousands of students gather across the state of Texas to compete in a series of mathematics challenges. Each challenge is an 80-question paper-and-pencil exam that must be completed in ten minutes or less. Questions range from simple arithmetic ($915 - 519$ is what, $11 \cdot 526$ is what) to probability (How many ways can 4 keys be arranged on a circular key ring, without a clasp?), complex numbers ($\frac{2 + i}{3 + 4i}$ is what), and Calculus (find $f'(-1)$ where $f(x) = 4001x^5 - 2005$). Students train all year, some beginning in elementary school, with hopes of being crowned the ultimate math geek. What makes these tests so challenging? All work must be done mentally and only the answer can be written in the space provided.

Some may call this test extreme for two reasons. One, there are 80 questions and only 10 minutes to complete it. If you do the math, that's 7.5 seconds per problem. Its also extreme because all work must be done mentally and any stray mark on a problem will be counted wrong.

Some may call the students who compete "mental." Who would want to spend so much time on questions that can be completed in a fairly straight-forward manner using traditional procedures everyone learns in a normal mathematics class?

This talk will first examine a sample test and then look at certain methods that can be used to solve some of the problems presented and other similar problems. The mathematics behind the methods used will also be explored. Don't forget to bring a pencil. You won't need an eraser, though.

Refreshments served between 3:00 and 3:30 p.m.

The talk begins at 3:30 p.m.

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