Helping Students See Beyond Calculus

Society needs more and better mathematics and science students. Many talented and promising students lose interest in mathematics—some never take a single mathematics course in college—because they never experience the beauty and importance of the many other areas of mathematics beyond Calculus.
Indeed, many high school students think of mathematics simply as Calculus and the topics leading to Calculus. Students would benefit enormously from more exposure to other areas of mathematics before leaving high school. This session is a step toward this goal.

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David Strong

Pepperdine University

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This session, a first step toward this goal, will be a forum for sharing presentations which are all of the following:

- An introduction to a specific mathematical idea or application
- Accessible to high school Calculus students
- Certainly interesting, hopefully entertaining, possibly captivating
- Self-contained
- Shorter than 45 minutes
- Available online (for now, posted at their authors' own websites)
- Comprised of slides (e.g. power points), video or audio clips, tools for experimentation and visualization, etc., and may include worksheets of problems for students to think about or work on
- High school teachers (or anyone else) could download, or access online, the presentations and supporting materials to use in their classes in the weeks after the AP exam

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Possible Topics

- Linear Algebra, Complex Numbers, Probability, Statistics, Combinatorics, Number Theory, Dynamic Systems, Cryptology, Digital Animation, ...

- Quality of presentations is more important than the particular topics or the quantity of presentations.

- The goal is to make students aware of the wide array of other mathematical areas beyond Calculus and to get them excited about these other areas.

- A major issue: the authors of these presentations are not there in person to give these presentations, answer questions, etc.

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Dissemination

- A dedicated website, like Course Communities? Maybe a separate part of MathDL? YouTube? Other online locales?

- Users can rate, like on Yelp, so that instructors can easily find presentations of highest quality.

- How to initiate communication with AP Calculus instructors?

- Other questions and possibilities?

Who is involved?

- Authors of presentations.
- Professional organizations?
  MAA? AMS? NSF?
- Who else is doing doing similar work?
  How can we have a more coordinated effort?
- What other people might be involved?
- Talk with me if you have ideas or are interested.

Comments and questions?