**AB Calculus**

**Advanced Placement Summer Institute**

**Online – Carleton College**

**June29 – July 3, 2020**

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## **Illinois Mathematics and Science Academy**

Overview:

This workshop will take a detailed look at the major topics of the Course Description for AB Calculus. For each topic, we will do problems and activities to help instructors deepen their understanding of calculus. Relationships between fundamental concepts will be stressed.We will clarify expectations of the AP program by examining past exam questions. Through this work, instructors will be asked to examine and then strengthen their own instructional methods to help students understand calculus.

While examining the specific content pieces listed below, we will look carefully at the new Course Description and the Mathematical Practices. Participants will be asked to examine how their own teaching meshes with the new emphases and expectations.

Technology will be used throughout the workshop to support exploration and understanding. During the week, I encourage participants to use Moodle to discuss many other important issues of teaching AB Calculus – textbooks, prerequisites, the AP audit, assessment, dealing with homework, technology, and whatever else that arises. (I will be happy to set up forums for specific topics.)

Attendees are expected to fully participate. This includes doing problems and activities as asked, and verbally contributing to group discussions online.

### **Monday**

Basic plan, expectations, etc.

AP Calculus CED, Mathematical Practices, Big Ideas, and general philosophy

(to be continued throughout)

Measuring Speed

An interesting graph

Approximating derivatives

Definition of a derivative

**Tuesday**

More on graphs

Limits

Continuity and the Intermediate Value Theorem

Calculating Derivatives

Mean Value Theorem

**Wednesday**

L’Hospital’s Rule

Measuring Distance

Properties of integrals

Accumulated Area

Definition of an integral

**Thursday**

Fundamental Theorems

Applications of integrals

Lots of old AP problems!

**Friday**

Differential Equations –

Introduction

Slope Fields

Separable equations

Lots more old AP problems