

2009 Syllabus for Calculus AB July 27 –31, 2009

Institute Overview

Welcome to AP Calculus! I am hoping that this work-filled week will be enriching, productive and fun and that you will go back to your classroom invigorated and excited about teaching AP Calculus.

This course will cover all topics assessed on the AP Calculus AB exam. Higher emphasis on written justifications of problem solutions was discussed in detail at the Reading and this issue will be addressed, as will the importance of the domain of solution curves when solving differential equations or investigating slope fields. Class activities that help the students grasp difficult concepts, such as average value of a function will be shared. In addition, multiple ways to approach topics, such as the derivative of the inverse function, $(f^{-1})'(x)$, will be investigated so that the students will be prepared for AP Exam questions which are posed in non-routine ways. My review packet called "Let's Put It All Together" prepares the students for any AP Exam question relating to a given graph, which has been a troublesome area for students in the past.

Discussion topics will include methods of instilling higher level thinking and conceptual understanding, as well as strategies for writing practice AP Exam questions. All topics will be approached both with and without the calculator.



Consultant Background

Wanda Savage started the AP Calculus AB Program at Klein Forest High School in Houston, Texas in 1992. She chairs the 30-member Mathematics Department in this large suburban high school and also serves as the Academic Decathlon coach. Her current teaching assignment at Klein Forest is Calculus BC, Calculus AB and Pre-Calculus Dual Credit. She has been an adjunct professor for Lone Star College - North Harris, teaching Calculus 1, for eight years.

Ms. Savage received a B.A. in Mathematics from Lamar University and a Masters Degree in Mathematics from Sam Houston State University. As an AP Calculus consultant for the College Board since 1995 she has made numerous presentations at AP institutes and educational conferences throughout the Southwest. In addition, she has been an AP Calculus Exam Reader for eight years and a table leader for the last two years. She received the College Board's AP Special Recognition Award in 2001 and again in 2008. She was a semi-finalist for the O'Donnell Texas AP Teacher of the Year award in 2008.

Institute Preparation

Veteran teachers are encouraged to bring lessons and materials to share. The sharing of best practices will broaden our perspective.

Institute Schedule

This is a tentative schedule and will be adapted to the needs of the participants.

Monday Morning Session

- Introductions and goal setting for week – meeting the needs of the participants
- Discussion: Course Syllabi
- Discussion: Tests and Assessments as Teaching Tools
- The four basic calculator capabilities and what needs to be shown on the AP Exam
- Introducing limits and leading into instilling higher-level thinking

Monday Afternoon Session

- Particle Motion, Velocity and Acceleration
- f, f', f''
- Matching Equations to derivatives - activity
- Derivatives of Composite Functions, Chain Rule
- Tangent line approximations
- Implicit Differentiation; Finding Vertical and Horizontal tangent lines

Tuesday Morning Session

- Tangent line problems approached as AP Exam Questions
- Derivatives of Inverse Functions
- Introduce Differential Equations
- Area Under the Curve
- Integration techniques - matching activity

Tuesday Afternoon Session

- Slope Fields and Differential Equations – domain of solution curves
- Slope Field Matching Activity
- Showing that an equation is a solution to a differential equation
- Discussion: Writing AP type questions to foster higher-level thinking

Wednesday Morning Session

- Teacher written take off of a 2007 exam question
- Functions defined by Integrals

- Technology
- Volumes of Solids of Revolution

Wednesday Afternoon Session

- Volumes of Solids by Cross Sections
- Project - Volumes by Cross Sections
- Average Value of a Function – activity (with candy)
- AP Test questions relating to Average Value

Thursday Morning Session

- Fundamental Theorem of Calculus
- “Let’s Put it all Together”
- Review for Exam Preparation
- Practice Exam questions

Thursday Afternoon Session

- AP Test questions
- The New Practice Exam available on AP Central

Friday Morning Session

- Sharing topics of discussion at the Reading
- Sharing any insights gained at the Reading
- Going over the operational 2009 AP Exam
- Going over the Form B 2009 Exam
- Reviewing Student Samples

Graduate Credit Option

Participants may also earn three graduate education hours for any of the AP Summer Institutes from Washburn University for a reduced tuition and the successful completion of an academic assignment.

Additional Information

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