

## AP\* CALCULUS AND PRE-AP\* HIGH SCHOOL INSTITUTES

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### July 11 - 14, 2011

**AP Calculus AB – Inexperienced**  
(Instructed by Wanda Savage)

### July 25 - 28, 2011

**Pre-AP Mathematics w/ Algebra/  
Precalculus Focus**  
(Instructed by Melissa Burkhead)

**AP Calculus AB – Experienced**  
(Instructed by Linda K. Hall)

**AP Calculus BC**  
(Instructed by Nancy Stephenson)

### August 1 - 4, 2011

**Pre-AP Mathematics for Middle School**  
(Instructed by Debbie Preston)

**Pre-AP Mathematics w/ Geometry Focus**  
(Instructed by Melissa Burkhead)

### **Registration:**

*Pre-Registration for any of the institutes is required, and may be accomplished online or by completing a registration form and returning it by regular mail. The registration fee for each workshop is \$475.00. The fee includes all materials used throughout the week, breakfast pastries, refreshments during breaks, and a light lunch Monday through Thursday. The institutes will start promptly at 8:00 a.m. each morning, Monday through Thursday and finish at 4:30 p.m.*

**For more information, visit:**  
<http://www.math.tamu.edu/conferences/apcalc>

### **Questions?**

Contact **Cara Barton**, Conference Coordinator,  
@ 845-2915 or [cara@math.tamu.edu](mailto:cara@math.tamu.edu)  
Or, **Sandra Nite**, Conference Director,  
@ 845-1170 or [snite@math.tamu.edu](mailto:snite@math.tamu.edu)

## TAMU Mathematics

## 16<sup>th</sup> Annual Advanced Placement Institutes

## Summer 2011



Texas A&M University Academic Building

This AP Summer Institute  
has been endorsed by



**AP Institutes**  
**Texas A&M University**  
**Department of Mathematics**

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**ATTENTION: Cara Barton**

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## AP CALCULUS AND PRE-AP INSTITUTES OFFERED:

### AP CALCULUS AB INSTITUTE FOR INEXPERIENCED AP INSTRUCTORS

The AP Calculus AB Institute for new teachers will emphasize approaching the material graphically and intuitively before practicing the analytical questions found in typical textbooks. Hints and practice for the AP test, the use of graphing calculators, and grading free response questions using the grading standard are also included. Internet and computer resources for calculus are included, as well as hands-on activities that increase student comprehension and engagement.



### AP CALCULUS AB INSTITUTE FOR EXPERIENCED AP INSTRUCTORS

This course is designed to meet the needs of teachers who have taught AP Calculus AB for a few years and who are ready for a more in-depth look at the topics that are covered in the course. Participants will receive materials to use with their students. Discussion of how to fit all of the topics into the school year and how to review for the AP test will be included, as well as discussion of new insights gained from the AP Reading. Participants should bring their calculus textbook, and a graphing calculator.

### PRE-AP HIGH SCHOOL MATHEMATICS INSTITUTE WITH GEOMETRY FOCUS

This course will connect algebraic and geometric thinking in a Pre-AP Geometry course; topic components will connect materials from Pre-AP Algebra I and hint to concepts covered in Pre-AP Algebra II in preparation for AP Calculus and AP Statistics. Topics will include the rule of four, limits, sequences, rates of change, functions, area under a curve, variation, trigonometry, geometric means, construction, areas of plane figures, areas and volumes of solids, coordinate geometry, transformations, and implications of the use of technology. Approaches to the study of geometry will include the use of manipulatives to develop geometric concepts before rigorous application, graphing calculator (TI-84+ and TI-Nspire), dynamic geometry in the computer lab, connecting geometric proof with the Pre-AP idea of "justifying your answer."



### PRE-AP HIGH SCHOOL MATHEMATICS INSTITUTE WITH ALGEBRA/ PRECALCULUS FOCUS

This course will emphasize critical components of the mathematics curriculum when teaching Pre-AP Algebra II or Precalculus. Connecting algebraic and geometric thinking, topic components will connect materials from Pre-AP Algebra I and to concepts covered in Pre-AP Algebra II and Pre-Calculus in preparation for AP Calculus and AP Statistics. Topics will include the rule of four, limits, sequences, series, rate of change, transformations, functions (polynomial, rational, exponential, logarithmic, trigonometric, inverse trigonometric, & piecewise defined), area under a curve, variation, trigonometry, approximations, fractals, areas and volumes of solids, and coordinate geometry. Approaches will include dynamic software and multiple ways for students to justify their work.

### PRE-AP MIDDLE SCHOOL MATHEMATICS INSTITUTE

The goal of the course is that teachers work together to experience and share ways to uncover the meaning and use of the concepts and basic skills needed for success in middle school Pre-AP mathematics. A variety of activities, strategies, and methods, including manipulatives, graphing calculators, and other tools, will be used to increase student understanding. Emphasis will be on exploration and problem solving algebraically, numerically, graphically, and verbally, since facility changing a problem's representation is often critical in revealing a method of solution. This course is targeted towards both inexperienced and experienced teachers.

### AP CALCULUS BC INSTITUTE

This course is designed to meet the needs of AP Calculus BC teachers. Participants will receive materials to use in the classroom including teaching notes, discovery lessons using the graphing calculator, worksheets, and AP practice problems. Discussion of how to fit the AP Calculus BC topics into the school year and how to review for the AP exam will be included as well as a review of new insights gained from the AP reading.

Topics will include arc length, Euler's method, techniques of integration (including integration by parts and by partial fractions), logistic growth, L'Hopital's Rule, improper integrals, parametric equations and vectors, polar equations, series of constants, Taylor polynomials and error bounds for polynomial approximations, and Taylor series.

