AP*CALCULUS AND PRE-AP* HIGH SCHOOL INSTITUTES

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June 13-16, 2016

AP Computer Science Principles
(Instructed by Michele Roberts)

July 5-8, 2016

AP Calculus AB
(Instructed by Wanda Savage)

AP Calculus BC
(Instructed by Nancy Stephenson)

Pre-AP Mathematics for High School
(Instructed by Melissa Burkhead)

Registration:
Pre-Registration for any of the institutes is ***required****, and may be accomplished online. The registration fee for each workshop is $500.00. The fee includes all materials used throughout the week, breakfast pastries, refreshments during breaks, and a light lunch. The institutes will start promptly at 8:00 a.m. each morning with dismissal at 4:30 p.m. each of the four days.*

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

Questions?
Contact **Cara Barton**, Conference Coordinator, @ 845-2915 or cara@math.tamu.edu
Or, **Sandra Nite**, AP Summer Institutes Director, @ 845-3261 or snite@math.tamu.edu

This AP Summer Institute has been endorsed by

CollegeBoard Advanced Placement Program

AP Institutes
Texas A&M University
Department of Mathematics
TAMU MS 3368
College Station, TX 77843-3368
Phone (979) 845-7554
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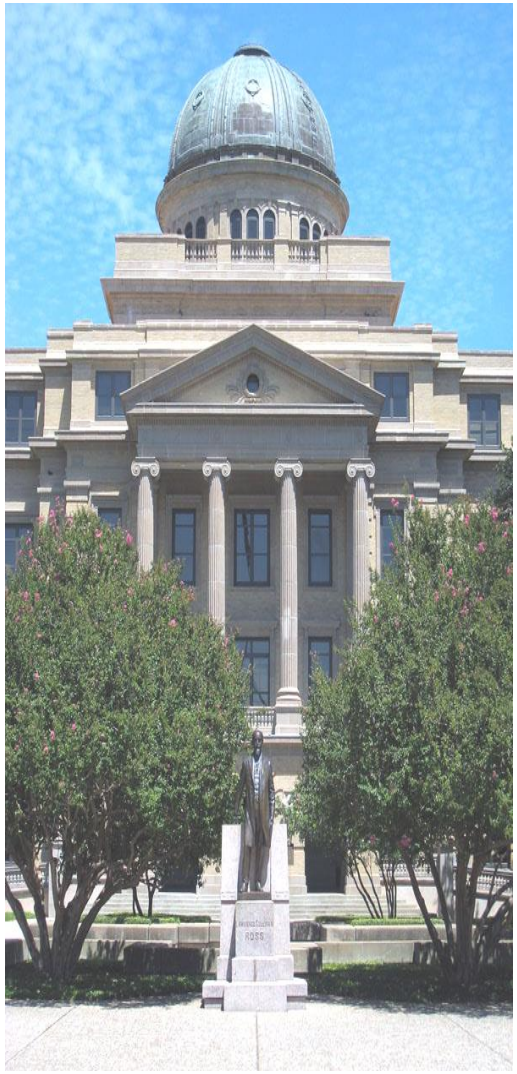
ATTENTION: Cara Barton

www.math.tamu.edu

TAMU Mathematics

21st Annual Advanced Placement Institutes

Summer 2016



Texas A&M University Academic Building

AP AND PRE-AP INSTITUTES OFFERED:

AP CALCULUS AB INSTITUTE

The content of Advanced Placement Calculus AB is covered with an emphasis on approaching the material graphically and intuitively with heavy emphasis on conceptual analysis. The AP exam is requiring more mathematical rigor in the justifications on the free response questions and this will be addressed. 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.

PRE-AP HIGH SCHOOL MATHEMATICS INSTITUTE

Teachers will be encouraged to teach Pre-AP strands that connect from Pre-AP Algebra I to Pre-AP Geometry, Algebra II, Pre-calculus. The main objective is for teachers to gain effective strategies that will prepare students for AP Calculus and AP Statistics. Teachers who want to inject the classroom with energizing and thought-provoking construction of mathematics are encouraged to attend.
Topics will include the following:

*The rule of four, limits, sequences, rate of change, functions, area under a curve, trigonometric tie ins, geometric means, construction, areas of plane figures, areas and volumes of solids, coordinate

*Algebraic perspectives that are relevant to high school mathematics students

*Using physical manipulatives to introduce mathematical concepts before rigorous application

*Identify ways for students to "justify the answer," early and often in the curriculum & address the question: "What makes my test Pre-AP?"

*Dynamic mathematics experiences, explorations with TI-Nspire CAS graphing calculators

Implications of the use of technology in Pre-AP Mathematics classes will be addressed.

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.

AP COMPUTER SCIENCE PRINCIPLES INSTITUTE

This workshop provides professional development for the CS Principles course launching Fall 2016. The Principles course is an entirely new approach to teaching Computer Science, focusing on computational thinking practices and built around seven "big ideas" of computing: Abstraction; Algorithms; Programming; the Internet; Data and Information; Creativity; and Global Impact. The Principles course is designed to broaden participation in Computer Science, with an engaging curriculum deliberately constructed to encourage participation of non-traditional computing students with hands-on course content such as problem solving, software engineering, data analysis, cybersecurity, internet operation and more. Teachers new to the field are welcome: the workshop focus will include both domain content as well as best practice teaching methods to insure classroom success.