

## AP\* AND HONORS HIGH SCHOOL INSTITUTES

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**July 8-11, 2019**

### AP Computer Science Principles

(Instructed by Michele Roberts)

### AP Calculus AB

(Instructed by Wanda Savage)

### AP Calculus BC

(Instructed by Nancy Stephenson)

### Honors Mathematics for High School

(Instructed by Sandra Nite)

#### **Registration:**

Pre-Registration for any of the institutes is **required**, and may be accomplished online. The registration fee for each AP Institute is \$575, and Honors is \$450. 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](mailto:cara@math.tamu.edu)  
Or, **Sandra Nite**, AP Summer Institutes Director, @ [snite@math.tamu.edu](mailto:snite@math.tamu.edu)

This AP Summer Institute  
has been endorsed by



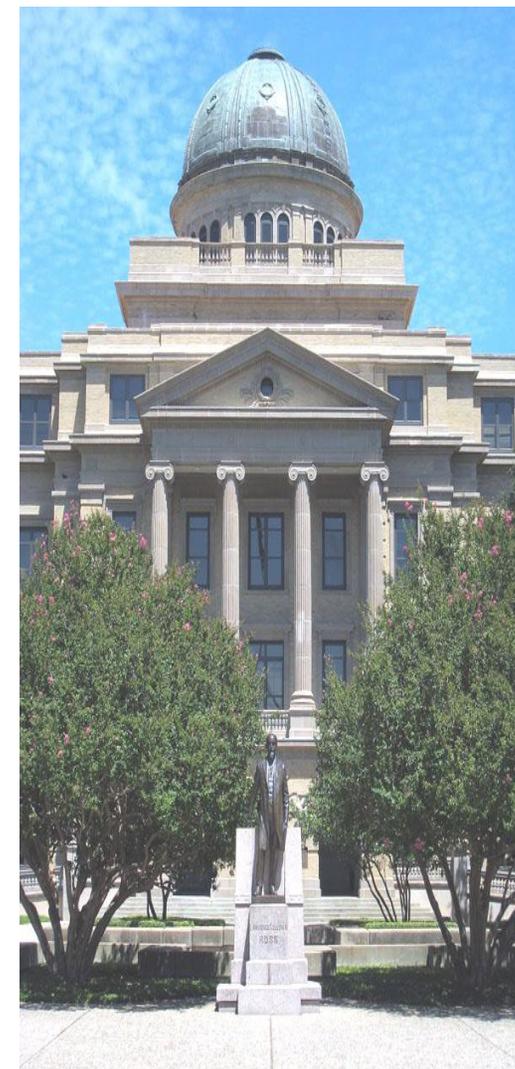
AP Institutes  
Texas A&M University  
Department of  
Mathematics  
TAMU MS 3368  
College Station, TX 77843-3368  
Phone (979) 845-7554  
Fax (979) 845-6028  
ATTENTION: Cara Barton

[www.math.tamu.edu](http://www.math.tamu.edu)

## TAMU Mathematics

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

Summer 2019



Texas A&M University Academic Building

## 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.



### HONORS HIGH SCHOOL MATHEMATICS INSTITUTE

Teachers will be encouraged to teach strands that connect from Algebra I to 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:

\*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 geometry and transformations .

\*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.

\*Dynamic mathematics experiences, explorations with TI graphing calculators

Implications of the use of technology in Honors 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 launched 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.

