

## 2023 Advanced Placement® Precalculus

### About the AP® Precalculus Summer Institute

This in-person 4-day course is for teachers preparing to teach AP Precalculus. A discussion regarding course purpose and philosophy will help guide our week's work. We will fully explore the current Course and Exam Description (CED) to gain an in-depth understanding of the vision of the course. A detailed analysis of the Essential Knowledge statements will provide a cohesive view of function analysis, rate of change work, and modeling implementation. A variety of effective activities to support student learning will help increase student access to content. We will discuss common student misconceptions, AP exam question approaches and scoring, and classroom strategies to maximize learning. Discussions will focus on enhancing teacher understanding and development of topics as well as sharing ideas and activities. Participants will find access to a Google Drive beneficial for sharing purposes.

### Course Goals

The topics listed below will be incorporated throughout the week. The emphasis, order, and inclusion of these and other topics will be driven by participant needs and goals.

- Introductions and Goals for the Week
- Curricular Requirements Discussion
- Diversity & Inclusion and Equity & Access Discussions
- AP Precalculus Course and Exam Description Deep-Dive
- AP Classroom Resources and Implementation
- Course Pacing Plan Development
- Strategies for Using Data to Assess, Reflect, and Adjust
- Unpacking and Implementing the Three Mathematical Practices
- Limit Notation as a Descriptive Thread in the Course
- Modeling Analysis Along with Interpretation of Residuals and Assumptions/Limitations
- Development and Planning of Unit 1: Polynomial and Rational Functions
- Incorporating Multiple Representations
- How Topics from Prerequisite Courses Manifest Differently
- Key Components of Unit 2: Exponential and Logarithmic Functions
- Key Components of Unit 3: Trigonometric and Polar Functions
- Key Components of Unit 4: Functions Involving Parameters, Vectors, and Matrices
- Analysis of CED Topic Notes and Learning Notes
- Creating a Classroom Community and Culture of Success
- Instructional Strategies and Effective Activity Design
- Exam Style Questions and Task Verbs
- A Deep-Dive with Practice Questions in the CED
- AP Exam Structure Discussion
- Expectations for Student Use of Justifications
- Graphing Calculator Discussions

**What to bring:**

Items you should have access to during the week include:

- A laptop computer/ tablet
- A favorite lesson strategy or practice to share
- A copy of your school's academic calendar
- A copy of the textbook you will be using next year (if you have access to one)
- A graphing calculator

**Instructor:**

**Julie Harrison** is a gifted-endorsed Math Teacher who has taught high school courses ranging from General Math to AP Calculus BC. In Spring of 2022, she transitioned from Eagle's Landing High School in McDonough, GA to Spelman College in Atlanta, GA. For 20 years, she taught AP Calculus (both AB and BC) and Precalculus at ELHS. For 14 years, she served as Math Department Chair at ELHS. Julie attended APSIs in both AB and BC Calculus early in her career. She has been involved in the AP Reading for Calculus exams since 2008 where she has worked on the operational, alternate, and international exams for both AB and BC. She began serving as a Table Leader at the AP Reading in 2016. Julie has served as a workshop presenter for her school, district, and Georgia DOE. She has been involved in curriculum writing at the district level since 2006, recently served as Precalculus Team Lead for the Georgia Math Standards Review Teacher Working Committee for Georgia's 2020 revision of standards, and currently serves on the Georgia DOE Precalculus Resource Revision Committee. Since Spring 2022, she has been involved, in a variety of ways, with the development of the Fall 2023 launching AP Precalculus course. She is a member of the AP Precalculus Development Committee. Her passion is supporting and increasing student access to AP Calculus and AP Precalculus courses as well as creating activities for students in the classroom, especially those that use formative assessment and technology. Another particular interest of hers is the transition from high school to higher education.