**AP Precalculus 2023-24 Janene Browning Room 911**

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**Course Overview**

AP Precalculus is designed to be the equivalent of a first semester college precalculus course. AP Precalculus provides students with an understanding of the concepts of college algebra, trigonometry, and additional topics that prepare students for further college level mathematics courses.

**Prerequisites**

Before studying precalculus, all students should develop proficiency in topics typically found in the Algebra 1-Geometry-Algebra 2 (AGA) content sequence. Students should have developed the following:

* Proficiency with the skills and concepts related to linear and quadratic functions, including algebraic manipulation, solving equations, and solving inequalities
* Proficiency in manipulating algebraic expressions related to polynomial functions, including polynomial addition and multiplication, factoring quadratic trinomials, and using the quadratic formula
* Proficiency in solving right triangle problems involving trigonometry
* Proficiency in solving systems of equations in two and three variables
* Familiarity with piecewise-defined functions
* Familiarity with exponential functions and rules for exponents
* Familiarity with radicals (e.g., square roots, cube roots)
* Familiarity with complex numbers
* Familiarity with communicating and reasoning among graphical, numerical, analytical, and verbal representations of functions

**Technology**

A graphing calculator is required for this course. We will use the TI-84 Plus calculator in class. Students will **not** be allowed to take school calculators home, so students must purchase their own if they would like to have a calculator to use outside of class. You may use another type of graphing calculator other than the TI-84 Plus, if you choose, but the calculator must be able to perform the following functions:

* Perform calculations (e.g., exponents, roots, trigonometric values, logarithms)
* Graph functions and analyze graphs
* Generate a table of values for a function
* Find real zeros of functions
* Find points of intersection of graphs of functions
* Find minima/maxima of functions
* Find numerical solutions to equations in one variable
* Find regression equations to model data (linear, quadratic, cubic, quartic, exponential, logarithmic, and sinusoidal) and plot the corresponding residuals
* Perform matrix operations (e.g., multiplication, finding inverses)

**Grading Structure**

| Classroom Practice and Homework | 30% |
| --- | --- |
| Quizzes/Tests | 50% |
| Exams | 20% |
|  |  |

**AP Exam**

AP Precalculus students have the option to take the AP exam at the end of the course. Student performance on the exam accurately represents the students’ achievement in an equivalent college course. Frequent and regular research studies establish the validity of AP scores as follows:

| **AP Score** | **Credit Recommendation** | **College Grade Equivalent** |
| --- | --- | --- |
| **5** | Extremely well qualified | A |
| **4** | Well qualified | A-, B+, B |
| **3** | Qualified | B-, C+, C |
| **2** | Possibly qualified | n/a |
| **1** | No recommendation | n/a |

**Course Structure**

AP Precalculus assignments, tests, and exams consist of multiple-choice problems and free-response problems. All free-response problems require work to be shown and justification for answers. Students must be able to be successful with all concepts both with and without a calculator. Students must be able to do basic math without a calculator. This includes:

* Addition, subtraction, multiplication, and long division
* Factoring
* Simplifying square roots and cube roots
* Evaluating exponential expressions
* Adding, subtracting, multiplying, and dividing fractions
* Converting decimals to fractions
* Converting fractions to decimals
* Logarithmic identities

Additionally, students must memorize all formulas as a formula sheet will not be given for tests, exams, or the AP exam.

**Exam Structure**

AP Precalculus consists of 4 units as follows:

| **Units** | **Exam Weighting** |
| --- | --- |
| **Unit 1**: Polynomial and Rational Functions | **30-40%** |
| **Unit 2**: Exponential and Logarithmic Functions | **27-40%** |
| **Unit 3**: Trigonometric and Polar Functions | **30-35%** |
| **Unit 4**: Functions Involving Parameters, Vectors, and Matrices | **Not assessed on the AP Exam** |

\*Units 1, 2, and 3 topics comprise the content and conceptual understandings in which colleges and universities typically expect students to be proficient, in order to qualify for college credit and/or placement. Therefore, these topics are included on the AP Exam. Unit 4 consists of topics that teachers may include based on state or local requirements.

The details of the exam, including exam weighting, timing, and calculator requirements, can be found below:

| **Section** | **Question Type** | **# of Questions** | **Exam Weighting** | **Timing** |
| --- | --- | --- | --- | --- |
| **I** | **Multiple-choice questions** |  |  |  |
|  | Part A: No calculator allowed | 28 | 43.75% | 80 minutes |
|  | Part B: Graphing calculator required | 12 | 18.75% | 40 minutes |
| **II** | **Free-response questions** |  |  |  |
|  | Part A: Graphing calculator required | 2 | 18.75% | 30 minutes |
|  | Part B: No calculator allowed | 2 | 18.75% | 30 minutes |

**Required Materials**

Students must bring a charged laptop or Chromebook with them to class every day. Assignments, tests, and exams may be online. Students will also need the following:

* Three-ring binder with side pockets
* notebook paper
* Pencils
* Erasers
* Highlighters for note taking (optional)

**Cheating**

I have been teaching long enough to be aware of the many possible ways to cheat in mathematics. I will be monitoring all student activity to catch and prevent cheating. If a student cheats on any assignment, test or exam, they will receive a grade of **ZERO** for that assignment as cheating will not be tolerated at all. Just to be clear, cheating is any of the following actions:

* Getting answers from another student without working problems out
* Giving answers to another student
* Use of apps or programs that gives answers to problems without the student working problems out
* Sending pictures of problems to anyone

Because cheating has been such an issue in mathematics courses, **phones are not allowed during class.**

**Tutoring**

Tutoring is offered before school by appointment. Please provide me with a 24-hour notice if you are coming for tutoring since I may have other meetings to attend. I will do everything I can to accommodate your request.

**Late Credit**

All assignments will be given a due date verbally by the teacher, listed on the online platform that it is assigned, or both. It is the students’ responsibility to meet all deadlines. If you cannot finish an assignment in class, it must be completed for homework. **Assignments turned in after the initial deadline will be awarded 50% credit. Final deadlines are final.**

**AP Classroom**

Please join AP Precalculus on AP Classroom using the appropriate code listed below:

| period |  |
| --- | --- |
|  |  |
| period |  |
| period |  |

Visit <https://apstudents.collegeboard.org/access-your-ap-resources/join-your-class-online> to sign up for AP Classroom.

**Teacher Recommendation**

All students have different skill sets in mathematics and work at vastly different paces. Understanding of the subject comes naturally to some students, while other students have to work harder to gain a full understanding of the concepts. If you realize that you are struggling to understand certain concepts, I recommend that you work on the material outside of class ***and*** come to tutoring. If I notice that you are struggling, I will reach out to you and/or your parents to take action. I believe that being proactive and asking lots of questions are critical to your success in mathematics.