

AP CALCULUS AB Course Syllabus  
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This course provides a complete study of differential and integral calculus. It is designed to prepare students for the Advanced Placement Calculus AB Examination. The course outline completes the recommended topics described by the College Board at a fast and intense pace to guarantee time for practice testing exercises. Students taking this course will take the Calculus AB Advanced Placement Exam in May.

Prerequisites: Pre-Calculus, with grade of B or better both semesters and teacher's approval required. Calculus is a one-year course of college-level calculus. A passing score on the AB AP Exam generally grants 1 semester of credit and/or placement in the 2nd semester Calculus class. This class will require more homework time for students.

#### Course Goals:

Students will:

- \*Work with functions represented in a variety of ways: graphical, numerical, analytical, or verbal and understand the connections among these representations.
- \*Understand the meaning of the derivative in terms of a rate of change and local linear approximation and use derivatives to solve problems.
- \*Understand the meaning of the definite integral both as a limit of Riemann sums and as the net accumulation of change and use integrals to solve problems.
- \*Understand the relationship between the derivative and the definite integral as expressed in both parts of the Fundamental Theorem of Calculus.
- \*Communicate mathematics both orally and in well-written sentences and explain solutions to problems.
- \*Model a written description of a physical situation with a function, a differential equation, or an integral.
- \*Use technology to help solve problems, experiment, interpret results, and verify conclusions.
- \*Determine the reasonableness of solutions, including sign, size, relative accuracy, and units of measurement.
- \*Develop an appreciation of calculus as a coherent body of knowledge and as a human accomplishment.

#### Materials:

- \*Textbook
- \*Supplemental Text: Multiple-Choice & Free Response Questions in Preparation for the AP Calculus (AB) Exam (this text will be provided).
- \*Both a scientific calculator and a graphing calculator (Ti-83 to Ti-94) are required. Calculators should be brought to class EVERY DAY – no exceptions!
- \*Graphing Paper / Pencils / pens / eraser / ruler
- \*Dedicated math 3-ring binder and/or tablet.

Warm-ups/Notes: Taking notes and solving the warm-up exercises is an integral part of learning. It is expected that each student will take notes during the classroom. Notes/warm-ups will be occasionally checked/graded for completeness and recorded under HW/ Classwork category. I will collect materials for grading from randomly selected students or students who do not pull their weight. Each missing/incomplete material will cause the students to lose 4 homework points.

Tests: One test per chapter (unless noted). Be present on test days, as make-up tests are made specifically for only one student and therefore, cannot be curved. Test make-ups are allowed only for excused absences and must be taken on the day of your return. If you know that you will be absent the day of the test, make arrangements with me to take it early. Show all work for full credit.

Classroom Procedures, Rules and Expectations:

1. Students are to be on time to class each day - Lateness will only be excused with an appropriate pass from a teacher or the office.
2. Students are expected to come prepared to class each day - Students are expected to have their notebook, pencil(s), calculator and assignments completed for each class period.
3. Students will show respect to everyone and everything in the classroom - Simply put, treat others, as you would like to be treated in return.
4. Students are expected to be an active part of the classroom.
5. Absentee Policy: Students are responsible for notes and homework that they have missed. They can get what they missed from asking a student for their notes on the day(s) they have missed. Also, I have homework online for the week that the students can look at for any missed homework.
6. All other school rules highlighted in the students' handbook apply in my classroom, especially those policies that address academic integrity, classroom discipline, appropriate school dress and cell phone usage.
7. Calculator Policy: A graphing calculator is mandatory for this course. A TI-84 or better calculator is preferred; the teacher will model problems using a TI-84 calculator. While no specific brand or model is endorsed some restrictions apply to calculator use for the course and the AP Exam. Any calculator with a Computer Algebra System (CAS) is not permitted. Any calculator with a QWERTY keyboard or internet or Bluetooth capabilities is not permitted on AP Exam. Students must have their own calculator for this course or sign one out with the teacher the first week of school. If a student signs a graphing calculator out, they will have to sign a paper that they are responsible for that calculator and if they do not return it they will owe \$120 at the end of the year. If you are buying your own, the following site may be helpful in choosing the appropriate calculator:  
<http://tinyurl.com/calcompare>

#### Grading Policies:

1. Homework: Is assigned daily and should be completed to reinforce concepts from class. Homework will be checked and noted in the gradebook on a scale of 0-4 (0 – Incomplete, 2 – Partially Complete, 4 – Complete). Homework, while checked for completeness and recorded as a reference of work habits.
2. Quizzes/Tests/POP Quizzes: Tests and Quizzes are announced in advance, if a student is absent only for the day of the assessment and does not miss instruction they are expected to take the assessment upon returning to school. Please check the teacher's website for all assignments. Test make-ups are allowed only for excused absences and must be taken on the day of your return. If you know that you will be absent the day of the test, make arrangements with me to take it early. Show all work for full credit. There will be POP Quizzes to keep the students alert and on task.
3. Cheating Policy: Any student caught looking at another student's paper, talking to another student, passing anything to another student, signaling to another student or using unauthorized materials during Tests or Quizzes will receive a **zero**.

#### IMPORTANT things to do before the AP Exam:

- Keep all of your homework and handouts until the end of the year. The same is true for notes and warm-ups. They will be useful for studying for the AP exam.
- STUDY the All Knowing Book of Calculus. Be sure you look over everything before the AP Exam.
- Look over your Practice AP Exams and review the notes you wrote so you do not make the same mistakes. Do the same with your AP Diary.

#### Suggestions and Tips for the upcoming Semester:

- AP Calculus AB covers an extensive amount of material and moves at a pace much faster than previous math courses. This course will require a student to put more time into this course reviewing, synthesizing, analyzing, and completing assignments than other math courses. To have a successful semester, keep the following in

mind: DO your homework regularly, LISTEN carefully, TAKE good notes and USE them. Success in this course requires students to be resourceful!

- Students are encouraged to come in for extra help before concepts and skills become problematic, not only after receiving a grade on an assessment. Time for extra help will be announced as the course progresses. Also, you should have a study group outside of school for a support system if you need help. It will benefit you and the students in the study group because you can share and explain your ideas to each other.
- It is recommended that students find a study partner or create a small group to study, review, and complete homework assignments. However, there is a distinct difference between working together and copying someone else's work. Students are encouraged to find a partner and meet together often to work on homework and/or study. This study group will also benefit students in the case of absences as a resource for missed class notes and assignments.

### To be SUCCESSFUL in AP Calculus AB

1. Attendance! Attendance! Attendance! Attend every class!
2. Attend review sessions when available. Treat assignments as Practice Exams.
3. Do your homework every night, and Show All Work! Write down the original problem; then begin solving it. Do not hand in just the answers. If you use a calculator, show how you set up the problem.
4. Do your own work. Be HONEST. Please don't copy answers from the back of the book (or from a friend) and hand them in as your own - that is plagiarism. Do check your work when you can.
5. You must be a "risk-taker." You must try each problem that is assigned. Do NOT leave problems blank on homework.
6. Remain Positive! Go You! Don't let this class or any class (or life) get you down. Be enthusiastic. "Calculus should make you happy." I have high expectations for you, even on the first day! I believe that students will rise to the level of expectation that the teacher has for them!

### AP Calculus Study tips

1. Know the types of questions and the weight of each type of question on the test or exam.
2. Be sure that your notes and homework assignments are complete.
3. Do not cram for tests. Cramming will often cause panic. You will not remember much of the information in the long term.
4. Study in "chunks." If you learn material over a number of weeks instead of over a few hours, you will retain the information for a longer period of time.
5. Over-learn material for the first test. Be sure you continue to study the material past the point at which you think you know the material well.
6. Form a study group with other members of the class or others who are enrolled in A.P. Calculus. It is helpful to discuss concepts with others ("To Teach is To Learn.").
7. Verbalizing will help make an idea more concrete. Read your notes aloud, but paraphrase as you read. If you can put the concepts in your own words, it is more likely that you understand the material you are studying.
8. Use Mnemonic Devices to help remember some basic definitions or steps in a procedure. Chief SOHCAHTOA can help you recall the definitions for the basic trig functions and FOIL can help you remember how to multiply two binomials together.
9. When you get homework papers returned, rework the problems that you missed.
10. When you get back your tests, rework the problems that you missed.

### Learning AP Calculus

\*Welcome to the Wonderful World of Calculus! To help you be successful, please read over the following suggestions.

\*Calculus requires that you make a substantial investment of TIME. You need to spend thirty minutes to one hour each night studying calculus. Build this into your life.

\*One of the best ways to learn anything is to teach it to someone else. Form a calculus study group. Amaze your friends and family with explanations of how to determine limits or how to compute derivatives.

**\*Math is not a spectator sport.** You will need to actively participate - you will need to exercise your brain. Some of the problems will require some serious thinking. Take time with them, talk about them, take breaks if you are getting frustrated (but a certain amount of frustration is good), and ask questions if you are stuck, enjoy the process: you are learning!

**\*Many problems that require calculus cannot be solved with the simple application of a formula.** Understanding the process for solving a particular type of problem is emphasized over memorizing formulas. In most cases, if you understand the concepts, memorizing a formula becomes unnecessary because you construct the process as you solve the problem.

**\*Mathematics is sequential.** Most everything that you have learned in algebra, geometry, and trigonometry will be used in calculus. And as we progress through calculus, what we learn in chapter 3 will be used later in chapters 5 and 6. Do not cram for tests!

**\*Remember, the process is more important than the result.** The fastest way to get into trouble in calculus is not to do the homework. You must practice what we have discussed in class. Similar problems will probably show up on tests and quizzes and exams, where you will be expected to work them quickly and accurately.

**\*Tests and Exams can be the bane of your existence or they can be showcases of your mastery of the material.** When studying for them, work every homework problem assigned in the sections, paying special attention to your methods. Review and work through examples in your notes, again with emphasis on the process being used.

### AP Calculus AB Exam Information

Date: Tuesday May 14<sup>th</sup>, 2019

Time: 8:00 am

Cost: \$94.00

### **Exam Format - AP Calculus AB Exam Components**

#### **Section I**

**Multiple Choice**—45 Questions | 1 hour, 45 Minutes | 50% of Exam Score

**Part A:** 30 questions; 60 minutes (calculator not permitted)

**Part B:** 15 questions; 45 minutes (graphing calculator required)

#### **Section II**

**Free Response**—6 Questions | 1 hour, 30 minutes | 50% of Exam Score

**Part A:** 2 questions; 30 minutes (graphing calculator required)

**Part B:** 4 questions; 60 minutes (calculator not permitted)

Please go to my website to find out all the AP Calculus Exam information. There are links that will help you to understand the Exam.

**Morning-School help is available** and other help will be announced as the year progresses!

By signing below, both the student and the parent/guardian are stating that they completely understand and agree to each of the rules and procedures detailed in the course syllabus and posted on the course website. Thank you in advance for your cooperation!

Sincerely,

Mrs. Kelchner