Ocean View Christian Academy
AP Calculus AB/BC MA1200

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Textbook: *Calculus for AP*, Larson & Battaglia, 1ˢᵗ Edition

I.   Basic Course Information

OVCA Course Philosophy

Mathematics is critical to teaching students the processes of logical and critical thinking and to guiding them towards literacy and understanding of the world around them. It is a gift from God intended to be used by man as part of his dominion over the Earth charged to him by God to make informed decisions about the world around him.

Course Description

AP Calculus AB focuses on students' understanding of calculus concepts and provide experience with methods and applications. It is designed to be the equivalent of a first semester college calculus course devoted to topics in differential and integral calculus.

Course Goal

The goal of this course is plain and simple – get a 3 or higher on the AP Exam in May. Accomplishing this goal will require students to step away from rote memorization as the main source of learning and begin learning to grasp broad concepts and apply them to an array of scenarios. They will begin to see mathematics as a tool for application rather than a course in a school.

Course Materials

- Mechanical pencils (please, no pens)
- Binder reserved for AP Calculus
- TI 84, TI 84+ or TI 89 Titanium Graphing Calculator (not optional)

About Advanced Placement (AP®)

AP® is a nation-wide program operated by the College Board (which also administers the SAT exam) and has been in existence for over 50 years. One of the many functions of an AP® course is to prepare students for the AP Exam given May each year in various subject areas. Although the course of study is well-described, the exam itself is prepared by a testing service in New Jersey and kept secret from students and teachers until it is actually given. Exams are graded on a scale of 1 to 5; 5 being the highest and 1 the lowest. Students who score 3 or above are considered to have "passed" the exam, and can receive credit from most colleges in the United States. Students who pass the exam will receive credit for freshman coursework in that particular subject area upon entering college.

About the AP® Calculus AB Course

Since this is a college level course taught in high school, it is very demanding, both in time and effort required. Homework is assigned each day through the first three quarters. The final quarter before the AP® Exam will be used for review. The amount of work outside of class depends upon the student and his/her background; however, students should be prepared to spend around 30-45 minutes each night after school on just their AP® Calculus homework. Those students who are heavily involved in after school activities and/or jobs will have to learn to budget their time very carefully. Each student will determine individually whether to pursue the AB track for this course depending on their prior background knowledge in mathematics.

Regarding the AP® Exam

This deadline to register for 2021 AP Exams is November 13, 2020 and the cost to take the exam is $95. The AP Calculus Exams will take place on Tuesday, May 4, 2021 at 8:00 AM. **Students enrolling in this course are expected to take the AP Exam.** Scores are generally available by the first week of August.

II.   Tentative Course Outline for AB

	Unit Name	Time Allotted	Summary of Topic
Quarter 1	Unit 0 – Precalculus Review	12 Days	Functions and their graphs, inverse functions, exponential and logarithmic functions
	Unit 1 – Limits and Continuity	23 Days	Definition of a limit, limit notation, estimating values from limits, algebraic properties of limits, squeeze theorem, definition of continuous
	Unit Name	**Time Allotted**	
Quarter 2	Unit 2 – Differentiation: Definition and Basic Derivative Rules	14 Days	Average rate of change, instantaneous rate of change, derivative notation, derivatives at a point, differentiability, power rule, basic derivative rules, derivatives of basic trig functions, product rule, quotient rule
	Unit 3 – Differentiation: Composite, Implicit, and Inverse Functions	11 Days	Chain rule, implicit differentiation, derivatives of inverse functions, derivatives of inverse trig functions, higher-order derivatives
	Unit 4 – Contextual Applications of Differentiation	11 Days	Interpreting meaning of derivative in context, motion along a line, rates of change, related rates, linearization, L'Hospital's Rule
	Unit Name	**Time Allotted**	
Quarter 3	Unit 5 – Analytical Applications of Differentiation	16 Days	Mean Value Theorem, Extreme Value Theorem, global and local extrema, critical points, increasing and decreasing functions, first derivative test, concavity, second derivative test, sketching functions, optimization, implicit relations
	Unit 6 – Integration and Accumulation of Change	19 Days	Accumulation of area, Reimann sums, summation notation, definite integral notation, fundamental theorem of calculus, accumulation functions, properties of definite integrals, antiderivatives, indefinite integrals, integrals using substitution, completing the square, techniques for antidifferentiation
	Unit 7 – Differential Equations	9 Days	Modeling with differential equations, verifying solutions, slope fields, separation of variables, initial conditions, exponential models
	Unit Name	**Time Allotted**	
Quarter 4	Unit 8 – Applications of Integrations	15 Days	Average value over an interval, motion along a line with integral context, definite integrals in context, area between curves, volume
	Review for Mock AP Exam May 1	12 Days	Comprehensive review of units 1-9
	AP Calc Exam May 5 8:00 AM		

III.   Course Policies

Guided Notes and Homework

We will use guided notes and homework packets to maximize the amount of class time spent practicing math skills. Your student will receive a packet with fill-in-the-blank notes and homework for the entire unit at the beginning of each unit. This minimizes the time the students spend copying information, the time I spend passing out papers, and helps boost organization so students can develop a clear picture of the curriculum and connect lessons throughout the school year.

Grading

The grades which students receive in the AP® Calculus 1 course are independent of the grades they receive on the AP® Calculus 1 exam. In fact, the AP® Exam grades are not announced until July, long after teachers have turned in their course grades. Students who work hard and keep up can expected to receive A or B grades; however, those who fall behind and give up on the course will receive grades lower than this.

Extra Credit

Opportunities for extra credit will be limited to questions on quizzes and tests that reflect an understanding above and beyond the expectation of the course. However, I may offer optional assignments or challenges throughout the year that students may complete to earn *extra homework grades* to bolster their grade. Additional work/tasks will not be assigned to students seeking extra credit to improve their grade.

Late Work

- The penalty for late assignments is 10% per day for up to five days. After the fifth day, the student will receive a zero.
- If a student misses a quiz or test, it is assumed that they will complete it after school on their first day back unless they communicate otherwise. Lack of communication will result in a deduction of 10% per day up to five days. After the fifth day, the student will receive a zero.
- The penalty for other assignments such as long-term projects, papers, lab write-ups, etc. is 10% per day for up to five days. After the fifth day, the student will receive a zero.

Help Sessions

Help sessions will be available **Monday, Tuesday and Thursday from 2:45 PM – 3:30** PM or by appointment. I am always happy to help by appointment!

Academic Dishonesty

Any student caught committing or facilitating academic dishonesty will receive no credit for the assignment and be referred to the office staff to discuss further consequences. Refer to your parent/student handbook for further details.

Classroom Guidelines

1. Be **ready** in your seat when the bell rings.
2. Be **respectful** of others, their property, and opportunity.
3. Be **responsible** for your own learning.

Consequences for not following the guidelines are listed below and will be carried out in a manner that seems fit depending on the severity of the offense.

- Verbal warning
- After class discussion
- Parent intervention
- Drop in effort/conduct grade
- Office intervention

Dropping This Class

OVCA policy states that a class may only be dropped at the semester; there is no two week window to test a class to see if it is a good fit for you. Additionally, honors/AP level courses utilize costly resources such as WebAssign which you may be required to cover if you choose to drop this course.

Communication

Students are welcome to communicate by stopping by my classroom or via email. I will not respond to emails from students after 6:00 PM or over the weekends.

Parents desiring a personal conference should communicate with me first via email. I will not hold drop-in meetings concerning a student's academic performance.

Final Comments

Please see the parents/student handbook for any questions not addressed in the syllabus. I have refrained from including OVCA school guidelines and procedures in this syllabus to conserve the school's resources.

On the next page is a contract of agreement. Please sign the agreement, students and parents, and return it by Wednesday, August 26, 2020. It is a homework grade.

If all of the information above seems scary; fear not, you are in good hands. I promise to provide any and all resources that I have in order to help you reach your goals.

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Contract of Agreement

Student

I have read the class syllabus and understand the classroom guidelines and policies as outlined. I agree to abide by the expectations and will commit myself to submitting quality work this school year.

Name (print): _____

Signature: _____

Date: _____

Parent

I have discussed the syllabus with my student. I understand the syllabus, support it, and will make every effort to ensure my student's academic success as outlined in the syllabus.

Name (print): _____

Signature: _____

Date: _____