CALCULUS A, HONORS
Syllabus

James Clemens High School
11306 County Line Road
Madison, AL 35756

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I.   Course Description: Calculus A is a beginning calculus course for those students who have completed Pre-Calculus. This course is an in-depth study of elementary functions, limits, and differential calculus. Some topics of integration are also introduced. This course is required for Advanced Placement (AP) Calculus AB and AP Calculus BC.

II.   Course Objectives: This course provides an introduction to differential and integral calculus. The primary aims of the course are to help students develop new problem solving and critical reasoning skills and to prepare them for further study in mathematics, the physical sciences, or engineering. By the end of the course, students should acquire skills needed to

- compute limits by graphical, numerical, and analytical methods;
- mechanically calculate derivatives of algebraic and trigonometric functions and combinations of functions;
- use derivatives to sketch graphs and solve applied problems; and
- evaluate definite and indefinite integrals.

In addition to the specific skill-oriented objectives above, students should

- have a better overall conceptual understanding of functions and their graphical, numerical, analytical, and verbal representations;
- understand derivatives as rates of change;
- understand definite integrals as accumulations of a rate of change and as Riemann sums;
- understand the relationship between derivatives and integrals;
- understand the difference between definite and indefinite integrals;
- have improved skills at problem solving and critical thinking: at dissecting a complex problem, determining steps in its solution, finding the solution, and testing whether it is reasonable; and
- be able to provide clear written explanations of the ideas behind key concepts from the course.

Students should also gain an increased appreciation of mathematics as part of the language of science and as a study in itself.

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III. Classroom Expectations:
- Be respectful of all persons in the class at all times.
- Be prepared for class each day – with materials, homework, etc.

Accommodations:
Requests for accommodations for this course or any school event are welcomed from students and parents.

Concerning Laptop Utilization: Student laptops should not be hard-wired to the network or have print capabilities. 2. Use of discs, flash drives, jump drives, or other USB devices will not be allowed on Madison City computers. 3. Neither the teacher, nor the school is responsible for broken, stolen, or lost laptops. 4. Laptops and other electronic devices will be used at the individual discretion of the teacher.

IV. Grading Policy:
Calculus A is an honors level course. 3-4 exams will be given during each 9-weeks grading period. The exam grades will account for 70% of the 9-weeks grade, with the remaining 30% being determined by quiz/assignment grades. The grading scale is as follows: A (90-100); B (80-89); C (70-79); D (65-69); and F (below 65). Make sure your absences are excused! Work can be made up and graded for excused absences only. Each grade taken on a day with an unexcused absence will be recorded as a zero.

V. Make-up Work Policy:
Tests are to be arranged by the student as soon as possible and no later than the first day back to class.

Students will be allowed to turn in homework assignments late **up until the end of the unit** in which the assignment is given (the day of the test for the unit is the last day). Late credit will be awarded instead of full credit if an assignment is turned in late.

VI. Text and Other Required Reading:
<u>Calculus of a Single Variable</u>, 11th. AP edition. Larson and Edwards, Cengage. This will be provided in the Schoology Course as a pdf.

VII. Materials and Supplies Needed:
Pencil, loose leaf paper, graph paper, and graphing calculator.

Students are required to bring graphing calculators to each class. Since the calculus AP exams now require graphing calculators for some questions, this technology has been extensively incorporated into the curriculum. Tests will often have a calculator portion and a non-calculator portion. The instructor will be using a TI-84 calculator for demonstration purposes and recommends it for student purchase.

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	18 – WEEK PLAN
Week 1	Limits and Their Properties: Evaluating Limits Analytically, Continuity & One-Sided Limits, & Infinite Limits
Week 2	Limits and Their Properties: Evaluating Limits Analytically, Continuity & One-Sided Limits, & Infinite Limits
Week 3	Limits and Their Properties: Evaluating Limits Analytically, Continuity & One-Sided Limits, & Infinite Limits
Week 4	Differentiation: Definition of Derivative & Applying basic formulas to find derivatives
Week 5	Differentiation: Product, Quotient, and Chain Rule
Week 6	Applications of Differentiation: f-f'-f'' relationships
Week 7	Applications of Differentiation: f-f'-f'' relationships
Week 8	Applications of Differentiation: f-f'-f'' relationships
Week 9	Applications of Differentiation: Existence Theorems
Week 10	Applications of Differentiation: Existence Theorems
Week 11	Applications of Differentiation: Implicit and Related Rates
Week 12	Applications of Differentiation: Related Rates
Week 13	Integration: Antiderivatives and Indefinite Integration
Week 14	Integration: Antiderivatives and Indefinite Integration
Week 15	Integration: Antiderivatives and Indefinite Integration
Week 16	Integration: Antiderivatives and Indefinite Integration
Week 17	Integration: Antiderivatives and Indefinite Integration
Week 18	Semester Exam Review