Calculus PreAP
Syllabus

Bob Jones High School
650 Hughes Road
Madison, AL 35758

Teacher: Teresa Tarter
Email: tgtarter@madisoncity.k12.al.us

I. Course Description: Calculus PreAP is a beginning honors-level 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.

III. Classroom Expectations: The academic misconduct policy of the school will be followed in this course.
The attendance policy of the school will be followed in this course.
All requests for accommodations, for this course or any school event, are welcomed from students and parents.
Any student who receives failing grades during this course is urged to discuss this with the teacher.

IV. Grading Policy: 5-6 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 ecused absences only. Each grade taken on a day with an unecused absence will be reorded as a zero.

V. BJHS Make-up Test Policy: Unlesss otherwise notified, make-up tests for excused absences will be given during Patriot Path in the designated math make-up testing room. *(During virtual learning, make-up exams will posted online.)*

VI. Text: Calculus, 9th edition. Roland Larson, Robert Hostetler, and Bruce Edwards, Houghton Mifflin Company.

VII: Materials and Supplies Needed: Students are encouraged to bring graphing calculators to each class. Several TI-84+ graphing calculators are provided for in-class use for those students not owning graphing calculators. Since the calculus AP exams now require graphing calculators for some questions, this technology has been extensively incorporated into the curriculum. In-class tests will not require the use of a graphing calculator; however, students will often be allowed to use graphing calculators on certain parts of the exams. The instructor will be using a TI-84 graphing calculator and presentation software, and therefore will provide assistance with the operation of TI-83/84 calculators. If a student chooses to use a calculator other than the TI-83/84, he/she is responsible for learning to operate that device. *(During virtual learning, I will provide a link to a free trial version of an online graphing calculator program.)*

18 – WEEK PLAN *	
Week 1	Pre-Calculus Review: Inequalities, Absolute Value, Graphs and Models, Linear Rates of Change, Trigonometric Review
Week 2	Continuation of Pre-Calculus Review Introduction to Limits: Informal evaluation & formal epsilon/delta definition
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 Rule & Quotient Rule
Week 6	Differentiation: Chain Rule & Implicit Differentiation
Week 7	Applications of Differentiation: Related Rates & Extrema on an Interval
Week 8	Applications of Differentiation: Mean Value Theorem & 1st Derivative Test
Week 9	Applications of Differentiation: Concavity, Limits at Infinity, & Curve Sketching
Week 10	Applications of Differentiation: Optimization, Differentials, & Newton's Method
Week 11	Integration: Antiderivatives and Indefinite Integration
Week 12	Integration: Area, Riemann Sums, and Definite Integrals
Week 13	Integration: Definite Integrals & Fundamental Theorem of Calculus
Week 14	Integration: Integration by Substitution
Week 15	Integration: Estimation using Trapezoidal Rule Applications of Integration: Particles in Motion & Area Between Two Curves
Week 16	Transcendental Functions: Differentiation & Integration of Natural Log Functions
Week 17	Transcendental Functions: Inverse Functions, Differentiation & Integration of Exponential Functions
Week 18	Semester Exam Review