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| ***Course Description:***  ***Course Objectives:*** | | Calculus A 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.  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   1. compute limits by graphical, numerical, and analytical methods; 2. mechanically calculate derivatives of algebraic and trigonometric functions and combinations of functions; 3. use derivatives to sketch graphs and solve applied problems; and 4. evaluate definite and indefinite integrals.   In addition to the specific skill-oriented objectives above, students should   1. have a better overall conceptual understanding of functions and their graphical, numerical, analytical, and verbal representations; 2. understand derivatives as rates of change; 3. understand definite integrals as accumulations of a rate of change and as Riemann sums; 4. understand the relationship between derivatives and integrals; 5. understand the difference between definite and indefinite integrals; 6. 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 7. 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. |  |
| ***Classroom Management Plan:*** | | **Classroom Management Plan**   * Verbal reprimand * Conference with student with parent contact * Withdrawal of privilege(s) with parent contact * Other consequences determined to be reasonable and appropriate by the school administration.   **Cell Phones**  Cell phones and earbuds/headphones will not be allowed to be used during classroom instruction time. Phones and earbuds/headphones will be put away in a location designated by the teacher and placed in silent mode. In secondary schools, students will have access to their phones and earbuds/headphones outside of classroom instruction time such as between classes and lunch. Failure to follow these procedures will result in a disciplinary referral to the office. |  |
| ***Grading Policy:*** | | Major assessments will count 70 percent of your grade. Homework and classwork will account for 30 percent of your grade. Grades will be updated weekly in PowerSchools. Each grading period will consist of nine weeks. |  |
| ***Make-up Work Policy:*** | | **Make-up tests** will **only** be given to a student who has an **excused absence**. **The student must make arrangements with the teacher to take a make-up test.** **Tests may be taken during Patriot Path with prior arrangement from each teacher.**  A student only has two chances (the next two Patriot Paths after the absence) to make up a test. All make-up tests will be administered in the designated classroom on the Patriot Path session roster.  **Homework/Classwork:** Students who are absent for **excused reasons** will be permitted to make up missed work. **It is the student’s responsibility to get their work assignments the day upon return to school and complete the assignments according to a time frame determined by the teacher within two weeks of the date of the last absence**. Grades of zero will be assigned for assignments missed because of unexcused absences. |  |
| ***Text and Other***  ***Required Reading:*** | | Calculus of a Single Variable, 11th edition. Ron Larson and Bruce Edwards, Cengage Learning. |  |
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| ***Materials and***  ***Supplies Needed:***  ***Laptops***  ***Turnitin Notice***  ***(English Courses)***  ***Accommodations*** | | 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 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 and therefore will provide assistance with the operation of TI-84 calculators. If a student chooses to use a calculator other than the TI-84, he/she is responsible for learning to operate that machine.  **Concerning laptop utilization:** 1.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.  The majority of writing assignments in this course will be submitted to Turnitin via the Schoology learning platform. Turnitin generates a report on the originality of student writing by comparing it with a database of periodicals, books, online content, student papers, and other published work. This program will help students discern when they are using sources fairly, citing properly, and paraphrasing effectively - skills essential to all academic work.  Students will have the opportunity to review their Turnitin originality report and will have the opportunity to make revisions before submitting their work for grading. Once their work is submitted, teachers have the opportunity to view the student/s originality report and grade accordingly.  Requests for accommodations for this course or any school event are welcomed from students and parents. |  |
| **18-Week Plan** | | | |
| Week 1 | Pre-Calculus Review: Inequalities, Absolute Value, Graphs, Linear Rates of Change and Trig | | |
| Week 2 | Continuation of Pre-Calculus Review  Introduction to Limits: Informal evaluation and formal epsilon/delta definition | | |
| Week 3 | Limits: Evaluating Limits Analytically, Continuity, 1-Sided Limits and Infinite Limits | | |
| Week 4 | Differentiation: Definition of Derivative and Applying basic formulas to find derivatives | | |
| Week 5 | Differentiation: Product Rule and Quotient Rule | | |
| Week 6 | Differentiation: Chain Rule and Implicit Differentiation | | |
| Week 7 | Applications of Differentiation: Related Rates and Extrema on an Interval | | |
| Week 8 | Applications of Differentiation: Mean Value Theorem and 1st Derivative Test | | |
| Week 9 | Applications of Differentiation: Concavity, Limits at Infinity, and Curve Sketching | | |
| Week 10 | Applications of Differentiation: Optimization, Differentials, and Newton’s Method | | |
| Week 11 | Integration: Antiderivatives and Indefinite integration | | |
| Week 12 | Integration: Area, Riemann Sums, and Definite Integrals | | |
| Week 13 | Integration: Definite Integrals and Fundamental Theorem of Calculus | | |
| Week 14 | Integration: Integration by Substitution | | |
| Week 15 | Integration: Estimation using the Trapezoidal Rule  Applications of Integration: Particles in Motion and Area Between Two Curves | | |
| Week 16 | Transcendental Functions: Differentiation and Integration of Natural Log Functions | | |
| Week 17 | Transcendental Functions: Inverse Functions, Differentiation, and Integration of Exponential Functions | | |
| Week 18 | Semester Exam Review | | |

**\*This is a tentative plan and may change at the discretion of the teacher.**

**Please sign below to acknowledge that you have received, read, and understood the syllabus.**

**Student name**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Student signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Parent/guardian name**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Parent/guardian signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Parent/guardian, please provide two ways for me to contact you (email address, phone numbers):**

Parent/guardian Email:

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Parent/Guardian Phone number:

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