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| ***Course Description:*** | Advanced Placement (AP) Calculus AB is a continuation of Calculus A. The primary focus of the course is preparing students for the AP Calculus AB exam. Topics covered include: inverse functions, techniques of integration, and applications of the integral. Also, the material from Calculus A will be reviewed extensively in preparation for the AP Calculus AB exam. Students are required to take the AP Calculus AB exam in May.  College credit at most universities may be earned for Calculus I by scoring a 3, 4, or 5 on the AP Calculus AB exam. Calculus A should be taken in the fall of the school year that a student is taking AP Calculus AB. |  |
| ***Course Objectives:*** | This course continues the study of differential and integral calculus that was begun in Calculus A. 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 be able to   * apply integration to several types of physical problems; * differentiate, integrate, and solve problems with exponential, logarithmic, and inverse trigonometric functions; * use separation of variables to solve simple differential equations and solve applied problems involving Newton’s Law of Cooling; * compute complicated integrals using a combination of substitutions, algebraic and trigonometric manipulation, partial fractions, and parts; * recognize and compute improper integrals; and * compute volumes of solids using washer, shell, and general cross- section methods.   In addition to the specific skill-oriented objectives above, students should   * 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. |  |
| ***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 PowerSchool. 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. |  |
| ***Textbook:*** | Calculus of a Single Variable, 11th edition. Ron Larson and Bruce Edwards, Cengage Learning. |  |
| ***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 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. |  |
| ***Laptops*** | 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. |  |
| ***Accommodations*** | Requests for accommodations for this course or any school event are welcomed from students and parents. |  |
| ***AP Exam*** | The AP Calculus exams are scheduled for 8:00 a.m. on Monday, May 13. The fee for an  AP Exam is $98 and should have already been paid. If you have not paid the $98 fee for the exam, please see the bookkeeper as soon as possible. |  |

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| **18 – WEEK PLAN \*** | |
| **Week 1** | Transcendental Functions: Differentiation and Integration of Functions with Bases other than e & Applications |
| **Week 2** | Differential Equations: Solving Separable Differential Equations, Growth & Decay, & Newton’s Law of Cooling |
| **Week 3** | Differential Equations: Slope Fields & Euler’s Method Transcendental Functions: Differentiation of Inverse Trig Functions |
| **Week 4** | Transcendental Functions: Integration of Inverse Trig Functions and Differentiation & Integration of Hyperbolic Functions |
| **Week 5** | Applications of Integration: Review of Area, Calculation of Volumes of Solids using Disk/Washer & Shell Methods |
| **Week 6** | Applications of Integration: Continuation of Calculations of Volumes of Solids, Finding Arc Length, and Computing Areas of Surfaces of Revolution |
| **Week 7** | Advanced Integration Techniques: Trigonometric Integration & Integration Using Trig Substitution |
| **Week 8** | Advanced Integration Techniques: Integration Using Partial Fractions & Integration by Tables |
| **Week 9** | Limits: L’Hopital’s Rule  Advanced Integration Techniques: Improper Integrals |
| **Week 10** | Differentiation: Differentiation of Parametric Functions & Review of Particles in Motion |
| **Week 11** | Review of Differentiation Techniques |
| **Week 12** | Review of Applications of Differentiation |
| **Week**  **13** | Review of Integration Techniques & Applications of Integration |
| **Week 14** | AP Exam Review: In-depth Review of Selected AP Topics in Preparation for AP Exam |
| **Week 15** | AP Exam Review: In-depth Review of Selected AP Topics in Preparation for AP Exam |
| **Week 16** | AP Exam Review: In-depth Review of Selected AP Topics in Preparation for AP Exam |
| **Week 17** | AP Exam Review: In-depth Review of Selected AP Topics & AP Exam |
| **Week 18** | Post AP Exam Selected Topics |

**\*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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