AP CALCULUS

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The Advanced Placement Program in Calculus enables a student to take a college level course while still in high school. This means that the course and the exam are not easy; therefore much more is expected from the student, but with hard work and dedication every student can achieve success. I am looking forward to working together for a successful and productive school year. I have signed this form as my commitment to do all I can to help my students succeed. With your commitment as well, I believe this course will be a positive and rewarding experience.

Students who are enrolled in AP Calculus should be aware of the following:

- The content in AP Calculus is very rigorous.
- It will be assumed that students in AP Calculus have mastered the material from all previous math courses. In general, review of concepts that were developed in the prior mathematics courses will be minimal.
- In general, there are no extra credit opportunities. Grades are based almost solely on Mastery of the material.

Students who expect to be successful in AP Calculus should possess the following:

- Near-perfect attendance. Catching up in an AP class can be very difficult.
- Exceptionally high rates of accuracy and timely completion on daily assignments.
- Strong ability to work independently.
- Strong organizational and time management skills.

Supplies

- Notebook paper
- Graph paper
- Pencils
- Colored pencils
- 8-AAA batteries

Textbook

Calculus and Analytic Geometry
Larson/Edwards, sixth edition
Cost: $89.68

Course Description

AP Calculus is a yearlong, college-level mathematics elective. This course provides a more in-depth treatment of differential calculus while introducing several higher-level topics. Riemann sums, interpretations and properties of definite integrals, applications of integrals, the Fundamental theorem of Calculus, techniques of anti-differentiation with applications, and numerical approximations to define integrals are all included in the topical outline. Problem-solving involving real-world applications is integrated into all topics of this course. Students will take the advanced Placement Calculus exam given by the College Board in May. Students' exam grades are sent to the colleges of their choice, which then grant credit, advanced placement, or both, depending on institutional policies. Weighted credit is awarded for this course.

AP Calculus Content

UNIT 1: The Cartesian Plane and Functions Real Numbers and the Real Line
- The Cartesian Plane
- Functions and Graphs
- Trigonometric Functions

UNIT 2: Limits and their Properties
- Introduction to Limits (C5)
- Properties for Limits
- Techniques for Evaluating Limits
- Evaluating Limits numerically and graphically. Students use the graph and the table to evaluate the limit. (C5)
- Continuity and one-sided limits
- Infinite Limits (C5)
- Limits as $x \to \infty$ Answers can be confirmed with the graphs and the numerical data. (C5)
- Asymptotic Behavior (C5)

UNIT 3: Differentiation
- Limit Definition of the Derivative
- Differentiability and Continuity
- Differentiation Rules and Rates of Change
- Product, Quotient rules and Chain Rules (C5)
- Higher-Order Derivatives
- Applications to position, velocity, speed and acceleration
- The derivative graphically, numerically and analytically (C5)
- Implicit Differentiation
- Particle Motion
- Related Rates (Related Rate Project) (C4)

UNIT 4: Applications of Derivatives
- Extrema on an Interval
- Rolle's Theorem and Mean Value Theorem
- Increasing and decreasing functions and the First Derivative Test
- Concavity and the Second Derivative Test
- Analysis of the graph of a function (C3) (C4) (C5)
- Limits at Infinity (C5)
- Characteristics & relationships of the graphs of f, f', f'' (Families of Curves) (C4)
- Optimization and Modeling
- Tangent line to a curve and linear approximation

UNIT 5: Integration
- Antiderivatives and Indefinite Integration
- Initial Condition (C5)
- Approximating areas
- Definite Integrals
- Riemann Sums (C5)
- Trapezoidal Rule
- Approximate definite integrals of functions using Riemann sums and Trapezoidal sums represented analytically, graphically, and tables of data (C3) (C5)
- Distance Traveled by a Particle Along a Line

- The Fundamental Theorem of Calculus
- The Second Fundamental Theorem of Calculus
- Integration by Substitution
- Change of Variables
- Mean Value Theorem for Integrals and the average value of a function

UNIT 6: Transcendental Functions and Modeling Natural Logarithmic Differentiation and Integration
- Derivative of an Inverse Function
- Derivatives and Integrals of Exponential Functions
- Bases other than e and applications
- Separating Variables: Solving Differential Equations
- Exponential Growth and Decay (C5)
- Slope Fields (C5)
- Initial Value
- Inverse Trigonometric Functions and their Derivatives
- Integrals Involving Inverse Trigonometric Functions

UNIT 7: Applications of Integration (C5)
- The integral as an accumulator of rates of changes
- Area of a Region Between Two Curves
- Volumes of Solids of Revolution: Disc and Washer Method
- Volumes of Solids with known Cross Sections
- Applications of integration involving a particle moving along a line

Grading Procedure

All grades will be determined on a point earned basis. Your 9-weeks grade in this class will be calculated using percentages. Evaluations (quizzes, tests, other assessments) will count for 70% and other assignments (homework, class work, etc.) will count for 30%. Each 9-weeks grade counts as 40% of your final average. Your Final Exam grade counts as 20% of your final average.

All tests will be valued at 100 points and will be given at least once per unit. Many units are so filled with material that you may have 3 or more tests within a single unit.

Homework completion is crucial for succeeding in Calculus! Since your tests will reflect the homework problems, failure to do homework will certainly result in low performance on tests. Homework WILL be assigned after each lesson. Opportunity for homework discussion will be given on the day following an assignment. As in most college Calculus courses, homework will not always be collected and graded. It is still in your best interest to complete every assignment.

Progress reports will be sent home periodically for students who have D or F averages. They must be signed by a parent and returned within 3 days or a parent conference will be scheduled.

Graded Free Responses will be given as homework occasionally. These are word problems that involve recalling math skills from previous chapters or previous math courses. These will be graded on the AP scale and will also be graded on organization of answer and neatness. You must work on organizational skills for these problems. Collectively they will count as a quiz grade each term.

Quizzes will be given frequently on problems, definitions, and conceptual understanding. These will not be announced and will vary in points possible from 10 to 50.

All students enrolled in an AP course are required to take the AP exam to fulfill the course requirements.

Expectations

Students are expected to be prepared for class. They are to bring writing utensils, paper, IPAD, and assignments to class each day.

Students are expected to complete and turn in all assignments on the date that they are due. All make-up tests are to be taken on the date assigned by the teacher. There will be no reminders of make-up work; it is the student's responsibility. Zeros will be given for assignments and tests not made up. Pop quizzes **CANNOT** be made up. If class is missed because of a field trip, club activity, etc. students are responsible for assignments **AS IF THEY WERE IN CLASS**. If a test is to be given the day a student returns to class, the student will take the test with the rest of the class. If a quiz or test is missed due to a field trip, etc., students should arrange a make-up date with the teacher.

Students are expected to follow all rules and policies of BRHS.   Coming to class late is a **TARDY**; tardies will be handled according to the policy in the handbook. Cheating -- by copying another person's test or homework – will earn the offender(s) a zero on the assignment and may be referred to the proper administrator.

Students are expected to respect the rights of their classmates to learn and my right to teach. Sleeping, talking excessively, throwing paper, wandering in the room, touching or hitting, etc. are distractions and take away from learning and teaching. Raise your hand to ask and answer questions. Do not interrupt the teacher or other students when they are talking. Do not leave at the end of class until I dismiss you.

Students are expected to keep their classroom clean. Students may not write on any surface in the room – desks, walls, tables, etc. Put trash in the trashcan rather than in the desks or on the floor.

Students are expected to participate **FULLY** in their cooperative groups.

Classroom Procedures

- **Procedures for Entering the Classroom**
    - o   Enter the classroom quietly without running or pushing.
    - o   Take your assigned seat.
    - o   Complete any bell-ringer activity provided.
    - o   Work quietly and by yourself
    - o   Wait for further instructions from the teacher

- **"I'm Late" Procedure** - You are late to class if you are not in your assigned seat when the bell rings.
    - o   Report to the Attendance Office and get a tardy slip.
    - o   Walk in quietly making as little noise as possible.
    - o   Take your assigned seat.
    - o   Join the activity in progress. If you don't know what the class is doing raise your hand until the teacher sees you.
    - o   Continue working (waiting) quietly until I get to your desk.

- **"I Was Absent" Procedure** – It is **YOUR** responsibility to obtain makeup work.
    - o   Turn in any assignments due.
    - o   During the last 5 minutes of class or after school ask me for makeup work. You may get assignment information from a responsible classmate.

- If you need to make up a test you must make arrangements with me to make it up **AFTER** school on that following Tuesday.

- **Turning In Assignments Procedure** – If it is **NOT** in the basket, it does **NOT** get graded.
  - **ALL** work must be placed in the class's assigned basket.
  - **EVERY** assignment should have your full name, date, and class period on it.
  - **LATE** assignments will **NOT** receive full credit.

- **Getting Your Attention Procedure -** There may be times when I may need to get everyone's undivided attention so that I may give directions, explanations, answer group questions, etc. or if the noise level gets too loud. When I need everyone to stop talking and pay attention to me: I will say "Class". When you hear the word class:
  - Say **"Yes"** in the tone and amount of times that I said **"Class"**
  - Stop talking and look at me.
  - Wait for me to speak.

- **End of Class and Class Dismissal Procedure**
  - Turn in any assignment due.
  - Be seated in assigned seat, be quiet, gather all belongings, and wait for ME to dismiss class.

- **Classroom Visitor Procedure**
  - Classroom visitors are **EXPECTED** daily in our classroom.
  - You are expected to follow our daily classroom rules and procedures.
  - You are expected to be polite to the visitor, but do not talk to the visitor unless he/she is talking to you directly.
  - You are expected to continue working on your assignment or activity.
  - There will be a weekly representative from each class that will:
    1. State their name and welcome the visitor to our class.
    2. Explain what we will be learning that day.
    3. Explain which activities/strategies we will be using to learn that day.
    4. Explain how what we are learning can be used other than in school.
  - If the visitor needs to speak to me privately, I expect you to remain in your seat without talking until I finish speaking with the visitor.

- **When You Finish Early Procedure -** If you finish all of your assigned work early you may:
  - Read independently
  - Work on a long term assignment assignments.
  - Volunteer as a peer tutor.
  - **DO NOT TALK OR DISTURB OTHERS.**

- **Restroom EMERGENCY Procedure -** Emergencies will occur. If you find yourself in an emergency, you will be able to go and **MUST** have a tardy pass to return to class.
  - Do not interrupt what is happening in class.
  - **QUIETLY** leave the classroom; go to the restroom; then go to the Attendance Office to get your tardy pass.
  - This is for REAL emergencies an MUST not be abused.

Consequences - Failure to Follow Expectations or Procedures

Everything we do in life has consequences. This is what will happen if you choose to violate classroom expectations or procedures.

- Late assignments will be accepted for half credit with an acceptable excuse.
- Violations of behavioral expectations will be addressed as follows:
    - 1st time: **Warning**
    - 2nd time: **Detention** (**30 minutes** & written math assignment on **Tuesdays after school**)
    - 3rd time: **Detention** (**60 minutes** & written math assignment on **Tuesdays after school**)
    - 4th time: **Call parents** (and/or send note home)
    - 5th time: **Referral**
    - **Severe:** **Steps 4 and 5**

I am available for help on most Tuesday, Wednesday, or Thursday afternoons until 4:00 pm.

My planning period is 3rd/7th period (11:34 – 1:37 pm). Parent conferences may be scheduled at this time or after school on Tuesday, Wednesday, or Thursday.

I accept the responsibility of teaching you mathematics. You must accept the responsibility of learning it. I am here to help you, but you must (1) attend class, (2) keep up with your assignments, (3) ask for help when you need it, and (4) never give up on yourself or me. I am looking forward to a GREAT year!!!

Jeanne S. Riddle

I have read the above information, and I understand what is expected of me in Mrs. Riddle's class. I agree to comply with Mrs. Riddle's expectations or accept the consequences associated with not meeting these expectations.

_____   _____
Student's Signature   PRINT Student's Name

I have read the above information, and I understand what is expected of my child in Mrs. Riddle's class. I agree to encourage my child to meet Mrs. Riddle's expectations and support Mrs. Riddle's disciplinary actions should her expectations not be met.

_____   _____
Parent's Signature   Parent's email address

_____   _____
Home Phone Number   Parent's Cell Phone

If you would like to receive text message reminders about important upcoming tests, due dates and events, text @apc201516 to 81010 or to receive messages via email, send an email to apc201516@mail.remind.com.