Course: MA38

Title: Academy AP Calculus

Location: Peggy Payne Academy, McClintock High School

Instructor Name and Degrees: Kristina Tomasi BAE, Med., gifted endorsed

Contact Information: Kristina Tomasi

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Office Hours: 7:00-7:45 am and 2:30-3:15 pm

Materials: Calculus: Early Transcendentals, Single Variable, James Stewart, 6th edition
TI-83 or better graphing calculator

Course Description: This course will cover topics in a full year course in calculus of functions of a single variable. It will start with functions, graph and limits, to include analysis of graphs, limits, asymptotic and unbound behavior, continuity, and parametric, polar and vector functions. The concept of derivative, derivatives at a point and as a function, second derivatives, applications of derivatives and computations of derivatives will follow. Next, interpretation and properties of definite integrals, applications of integrals, applications of antidifferentiation, and the Fundamental Theorem of Calculus will be covered. Polynomial approximation and Series to include series of constants and Taylor Series will finish the course. Extensive use of the graphing calculator will be considered an integral part of the course and thus done on a regular basis with the goal of preparing the students to pass the AP exam for calculus AB or BC. The student will develop further knowledge of algebra and calculus through use of graphing calculators and computers.

Course Competencies:
1. Analyze the behavior and continuity of functions using limits.
2. State the definition and explain the significance of the derivative.
3. Compute the derivative using the definition and associated formulas for differentiation.
4. Solve application problems using differentiation.
5. State and explain the significance of the Fundamental Theorem of Calculus.
6. Compute anti-derivatives, indefinite and definite integrals of elementary functions.
7. Read and interpret quantitative information when presented numerically, analytically or graphically.
8. Compare alternate solution strategies, including technology.
9. Justify and interpret solutions to application problems.
10. Communicate process and results in written and verbal formats.
11. Evaluate indefinite, definite and improper integrals using various algebraic, trigonometric and numerical techniques.
12. Solve applied problems taken from the sciences using integration.
13. Analyze curves in the plane described using parametric and polar equations.
14. Define, classify, and analyze conic sections.
15. Determine the convergence or divergence of sequences, series of constants, and power series.
16. Compute polynomial approximation and power series representation of elementary functions using derivatives and integrals.
17. Compare alternate solution strategies, including technology.
18. Communicate process and results in written and verbal formats.
19. Justify and interpret solutions to application problems.

Class Structure:

- Each day I will answer questions, explain the next lesson, and give time to work (if there is any time left).
- An assignment sheet will be given out each chapter.
- If you are absent on the day of a quiz or test, you will take it in class the day you return.
- NO LATE WORK WILL BE ACCEPTED.

Attendance: See MHS student handbook

Grading: Grades will be assessed according to four categories.

1. Tests: One or two per chapter (100 pts).
2. Quizzes: one or none per chapter. (50 pts).
3. Homework: Homework approximately four to five times per week (1 - 2 pts per problem). All assignments are due the following day unless otherwise noted.
4. Projects: Explorations and Investigations are done in class or at home (5-10 pts per project).

The grades will be weighted as follows:
    10% homework and projects
    90% Tests and Quizzes.

The grading scale is 90-80-70-60, and grades are updated frequently on-line.

The Semester grade is calculated as a 40-40-20. This means that each quarter grade will count as 40% of the semester grade and the final exam will count as 20%.

Rio Salado college credit: Students may choose to enroll for college credit through Rio Salado Community College. By successfully completing the first semester, the student can earn college credit for MAT 221 – Calculus with Analytic Geometry I (4 credit hours). Second semester, the student may choose to enroll again for college credit for MAT 231 – Calculus with Analytic Geometry II (4 credit hours). The grade obtained in my class will be the grade given for college transcript. You cannot take MAT 231 without having passed MAT 221.

AP credit: In May, the students will take the AP Calculus BC exam. For this exam, they will receive a grade from 1 to 5 for the BC test, as well as an AB subscore. A student who is successful on the BC exam will receive credit for Calculus I and II, dependant upon each individual college's criteria. If unable to receive credit for Calculus II, the AB subscore is used to determine credit eligibility for Calculus I.