Course: MA37

Title: Academy Advanced Algebra and Calculus Foundations

Location: Peggy Payne Academy, McClintock High School

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

Contact Information: Kristina Tomasi

Phone 480-839-4222 ext.68186; email ktomasi@tuhsd.k12.az.us

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

Materials: Discovering Advanced Algebra an Investigative Approach; Key Curriculum Press, 2004
TI-83 or TI-84 plus graphing calculator

Course Description: This course will cover topics in advanced algebra, sequences and series, trigonometry, analytic geometry, and elementary functions to include linear, polynomial, rational, exponential, logarithmic, trigonometric, inverse trigonometric, piecewise functions, parametric, vector and polar functions. The course will provide students familiarity with the properties and language of functions as well as the graphs and algebra of functions as well as values of trigonometric functions. Extensive use of the graphing calculator will be considered an integral part of the course and thus done on a regular basis.

Course Competencies:
1. Recognize and visualize mathematical patterns called sequences
2. Write recursive definitions and display graphs of sequences
3. Write linear equations from given data including arithmetic sequences and data sets.
4. Solve systems of linear equations and inequalities.
5. Learn about linear, quadratic, square root, absolute value, rational and semi-circle families of functions.
6. Learn how to find the inverse of a function
7. Review the properties of exponents and the meaning of rational exponents.
8. Apply logarithms, the inverses of exponential functions.
9. Solve any polynomial equation and graph any polynomial function.
10. Define complex numbers and operations with them.
11. Write, graph and learn about properties of conic sections.
12. Add, subtract, multiply and divide rational expressions.
14. Solve systems of equations with matrices.
15. Write parametric equations and simulate objects in motion with parametric equations.
16. Convert between parametric equations and equations that only use x and y.
17. Use trigonometric ratios and their inverses to solve application problems.
18. Identify the relationship between circular motion and the sine and cosine functions.
19. Use a unit circle in both degrees and radians to find trigonometric values.
20. Study trigonometric identities.
21. Identify arithmetic or geometric series, find specific terms and sums of finite series.
22. Learn about randomness and the definition of probability.
23. Use permutations and combinations to determine probabilities.
24. Create, interpret, compare and make conclusions about data based on graphs and numerical values.

Attendance: See MHS student handbook

Grading: Grades will be assessed according to four categories.
1. Tests: One 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:
        20% homework
        10% projects and investigations
        70% Tests and Quizzes.

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%.