Math Honors Program Pre-Calculus

This project entails solving a series of complicated trigonometric identities, showing each step how the identity was verified. To do this assistance was taken from the textbook. One portion of the projects involves problems that can be solved using the topics covered in class including reciprocal, Pythagorean, and even-odd identities. However, the problems selected for this project are a step above the ones discussed in class, quizzes, homework, tests, or final. Verifying each identity with all cohesive steps requires a very solid basal understanding of the material. Solving these problems demonstrates deeper learning and greater proficiency beyond the class material.

A second portion of the honors project incorporates sets of analytical problems which require knowledge of double-angle formula, power-reducing formula, and half. Double-angle and power-reducing formulas are a topic covered in the course, but the level of difficulty of the problems selected is higher. However, the half-angle formula is another more challenging topic, which is not included in the syllabus. Solving half-angle identity problems demonstrate going beyond the coursework and applying analytic trigonometric knowledge and critical thinking.

The last part of the project includes launching a model rocket. To experiment further with the gadget, the device was launched at different angles, and a subsequent variation was found in the maximum altitude reached.

To complete the p0roject successfully five meetings took place over the semester. The chapters selected for this project are a part of the MATH 1113 syllabus, but this project deals with escalated exercises that are in the textbook, and real-life application of trigonometric knowledge learned in class, through model rocket; finding the unknown height with two known values angle and adjacent side and applying the trigonometric function. The final report was presented in the form of a word document, which includes verification of all identities, showing each step and mentions the formulas used, illustrations of the model rocket kit, and the results received.