

Mathematics – High School Mathematics IV

Building Relationships among Complex Numbers, Vectors, and Matrices	Analysis and Synthesis of Functions
<ul style="list-style-type: none"> • Represent abstract situations involving vectors symbolically. 	<ul style="list-style-type: none"> • Write a function that describes a relationship between two quantities. (e.g., if $T(y)$ is the temperature in the atmosphere as a function of height, and $h(t)$ is the height of a weather balloon as a function of time, then $T(h(t))$ is the temperature at the location of the weather balloon as a function of time.)
Trigonometric and Inverse Trigonometric Functions of Real Numbers	Derivations in Analytic Geometry
<ul style="list-style-type: none"> • Make sense of the symmetry, periodicity, and special values of trigonometric functions using the unit circle. • Prove trigonometric identities and apply them problem solving situations. 	<ul style="list-style-type: none"> • Make sense of the derivations of the equations of an ellipse and a hyperbola.
Modeling with Probability	Series and Informal Limits
<ul style="list-style-type: none"> • Develop a probability distribution. (e.g., Find the theoretical probability distribution for the number of correct answers obtained by guessing on all five questions of a multiple-choice test where each question has four choices, and find the expected grade under various grading schemes.) 	<ul style="list-style-type: none"> • Apply mathematical induction to prove summation formulas.