



Alignment Document
State of Hawaii and Aventa Learning Pre-Calculus

Pre-Calculus
2005-2007 Benchmark Blueprint

Strand	Standard	Topic	Benchmark	Unit Name	Course Topic Description
Numbers and Operations	AG.1 Understand numbers, ways of representing numbers, relationships among numbers, and number systems		There are no benchmarks for this standard for this Grade/Course.		
Numbers and Operations	AG.2 Understand the meaning of operations and how they relate to each other	Operations	MA.AG.2.1 Use the sum, difference, scalar multiplication, dot product, and cross product of vectors to solve problems		
Numbers and Operations	AG.3 Use computational tools and strategies fluently and, when appropriate, use estimation		There are no benchmarks for this standard for this Grade/Course.		
Measurement	AG.4 Understand attributes, units, and systems of units in measurement; and develop and use techniques, tools, and formulas for measuring		There are no benchmarks for this standard for this Grade/Course.		

Geometry and Spatial Sense	AG.5 Analyze properties of objects and relationships among the properties		There are no benchmarks for this standard for this Grade/Course.		
Geometry and Spatial Sense	AG.6 Use transformations and symmetry to analyze mathematical situations		There are no benchmarks for this standard for this Grade/Course.		
Geometry and Spatial Sense	AG.7 Use visualization and spatial reasoning to solve problems both within and outside of mathematics	Visualization and Spatial Reasoning	MA.AG.7.1 Recognize conic sections and describe their characteristics	Conics, Polar Coordinates and Complex Numbers	Conics: Circles, Ellipses, Hyperbolas and Parabolas
Geometry and Spatial Sense	AG.8 Select and use different representational systems, including coordinate geometry	Coordinate Geometry	MA.AG.8.1 Use formulas involving division of a line segment and angles between two lines MA.AG.8.2 Use the relationship between the slope of a line and the angle of inclination to solve problems MA.AG.8.3 Use the polar coordinate system to graph MA.AG.8.4 Use the relationship between polar and rectangular form to convert back and forth	Conics, Polar Coordinates and Complex Numbers Conics, Polar Coordinates and Complex Numbers	Polar Coordinates and Complex Numbers Polar Coordinates and Complex Numbers
Patterns, Functions, and Algebra	AG.9 Understand various types of patterns and functional relationships	Geometric Shapes and Their Properties and Relationships	MA.AG.9.1 Use the relationship among the properties of conic sections (e.g., asymptotes, center of a conic, directrix, eccentricity, focus, major and minor axis, vertex) and graph conic sections using the standard form of the equations	Conics, Polar Coordinates and Complex Numbers	Conics: Circles, Ellipses, Hyperbolas and Parabolas

			<p>MA.AG.9.2 Use properties (e.g., domain, range, intercepts, symmetry, asymptotes) to graph polynomial, rational, and radical equations in two variables</p> <p>MA.AG.9.3 Use properties (e.g., symmetry, tangents at the origin, excluded values, intercepts) to graph polar equations</p> <p>MA.AG.9.4 Use addition of ordinates to graph sums and differences of functions</p>	Conics, Polar Coordinates and Complex Numbers	Polar Coordinates and Complex Numbers
Patterns, Functions, and Algebra	AG.10 Use symbolic forms to represent, model, and analyze mathematical situations	Numeric and Algebraic Representation	<p>MA.AG.10.1 Explain that a vector equation can represent a plane</p> <p>MA.AG.10.2 Translate between parametric representations of curves and equations using rectangular coordinates</p> <p>MA.AG.10.3 Use the concept of the distance from a point to a plane, distance between points, and the angle between two planes in three-dimensions to solve problems</p> <p>MA.AG.10.4 Determine the intersection of polar equations algebraically and graphically, including using graphing technology when available</p> <p>MA.AG.10.5 Convert between parametric equations and their graphs</p> <p>MA.AG.10.6 Determine the intersection of curves algebraically and graphically, including using graphing technology when available</p>	Conics, Polar Coordinates and Complex Numbers Conics, Polar Coordinates and Complex Numbers Conics, Polar Coordinates and Complex Numbers	Parametric Equations Polar Coordinates and Complex Numbers Parametric Equations Parametric Equations



Data Analysis, Statistics, and Probability	AG.11 Pose questions and collect, organize, and represent data to answer those questions		There are no benchmarks for this standard for this Grade/Course.		
Data Analysis, Statistics, and Probability	AG.12 Interpret data using methods of exploratory data analysis		There are no benchmarks for this standard for this Grade/Course.		
Data Analysis, Statistics, and Probability	AG.13 Develop and evaluate inferences, predictions, and arguments that are based on data		There are no benchmarks for this standard for this Grade/Course.		
Data Analysis, Statistics, and Probability	AG.14 Understand and apply basic notions of chance and probability		There are no benchmarks for this standard for this Grade/Course.		