

Alignment Document

State of Connecticut And Aventa Learning Pre-Calculus

Pre-Calculus

2005-2007 Benchmark Blueprint

State Standard Number	State Standard Area / Description	Unit Name	Course Topic Description
1	Patterns and functional relationships can be represented and analyzed using a variety of strategies, tools and technologies.		
1.1	Understand and describe patterns and functional relationships.	Discrete Mathematics	Sequences and Series: Convergence, Divergence and Applications
		Exponential and Logarithmic Functions	Values and Applications
1.1.a	Model real-world situations and make generalizations about mathematical relationships using a variety of patterns and functions.	Exponential and Logarithmic Functions	Values and Applications
		Conics, Polar Coordinates, and Complex Numbers	Parametric Equations
1.2	Represent and analyze quantitative relationships in a variety of ways.	Conics, Polar Coordinates, and Complex Numbers	Parametric Equations
		Exponential and Logarithmic Functions	Properties and Graphs
		Discrete Mathematics	Sequences and Series: Convergence, Divergence and Applications
1.2.a	Relate the behavior of functions and relations to specific parameters and determine functions to model real-world situations.	Conics, Polar Coordinates, and Complex Numbers	Parametric Equations

1.3	Use operations, properties and algebraic symbols to determine equivalence and solve problems.	Conics, Polar Coordinates, and Complex Numbers	Polar Coordinates and Complex Numbers
1.3.a	Use and extend algebraic concepts to include real and complex numbers, vectors and matrices.	Conics, Polar Coordinates, and Complex Numbers	Polar Coordinates and Complex Numbers
2	Quantitative relationships can be expressed numerically in multiple ways in order to make connections and simplify calculations using a variety of strategies, tools and technologies.		
2.1	Understand that a variety of numerical representations can be used to describe quantitative relationships.	Conics, Polar Coordinates, and Complex Numbers	Parametric Equations
		Exponential and Logarithmic Functions	Values and Applications
2.1.a	Extend the understanding of number to include the set of complex numbers.	Conics, Polar Coordinates, and Complex Numbers	Polar Coordinates and Complex Numbers
2.2	Use numbers and their properties to compute flexibly and fluently, and to reasonably estimate measures and quantities.	Conics, Polar Coordinates, and Complex Numbers	Parametric Equations
		Exponential and Logarithmic Functions	Values and Applications
2.2.a	Investigate mathematical properties and operations related to objects that are not numbers	Discrete Mathematics	Sequences and Series: Convergence, Divergence and Applications
3	Shapes and structures can be analyzed, visualized, measured and transformed using a variety of strategies, tools and technologies.		
3.1	Use properties and characteristics of two- and three-dimensional shapes and geometric theorems to describe relationships, communicate ideas and solve problems.	Conics, Polar Coordinates, and Complex Numbers	Conics: Circles, Ellipses, Hyperbolas, and Parabolas
		Conics, Polar Coordinates, and Complex Numbers	Parametric Equations
3.1.a	Use methods of deductive and inductive reasoning to make, test and validate geometric conjectures.	Conics, Polar Coordinates, and Complex Numbers	Conics: Circles, Ellipses, Hyperbolas, and Parabolas

		Conics, Polar Coordinates, and Complex Numbers	Conics: Circles, Ellipses, Hyperbolas, and Parabolas
3.1.b	Explore non-Euclidean geometries.		
3.2	Use spatial reasoning, location and geometric relationships to solve problems.	Exponential and Logarithmic Functions	Properties and Graphs
3.2.a	Use a variety of coordinate systems and transformations to solve geometric problems in 2 and 3 dimensions using appropriate tools and technologies.	Conics, Polar Coordinates, and Complex Numbers	Parametric Equations
3.3	Develop and apply units, systems, formulas and appropriate tools to estimate and measure.	Discrete Mathematics	Sequences and Series: Convergence, Divergence and Applications
		Exponential and Logarithmic Functions	Values and Applications
3.3.a	Approximate measurements that cannot be directly determined with some degree of precision using appropriate tools, techniques and strategies.	Conics, Polar Coordinates, and Complex Numbers	Conics: Circles, Ellipses, Hyperbolas, and Parabolas
4	Data can be analyzed to make informed decisions using a variety of strategies, tools and technologies.		
4.1	Collect, organize and display data using appropriate statistical and graphical methods	Exponential and Logarithmic Functions	Values and Applications
4.1.a	Model real data graphically using appropriate tools, technologies and strategies.	Exponential and Logarithmic Functions	Values and Applications
4.2	Analyze data sets to form hypotheses and make predictions.	Exponential and Logarithmic Functions	Values and Applications
4.2.a	Describe and analyze sets of data using statistical models.	Exponential and Logarithmic Functions	Values and Applications
4.3	Understand and apply basic concepts of probability.		
4.3.a	Solve problems using the methods of discrete mathematics.	Discrete Mathematics	Sequences and Series: Terms, Sums and Limits
		Discrete Mathematics	Sequences and Series: Convergence, Divergence and Applications
4.3.b	Make statistical inferences through the use of probability.		