

Pre-Calculus

State Standard Number	State Standard Area/Description	Unit Name	Course Topic Description
1	Students engage in the mathematical processes of problem solving and reasoning, estimation, communication, connections and applications, and using appropriate technology.		
1.1	recognize and formulate problems from situations within and outside mathematics and apply solution strategies to those problems.	Exponents and Logarithms	Section 1: Introduction: Exponential Functions
1.2	select, apply, and evaluate appropriate estimation strategies throughout the problem-solving process.		
1.3	formulate definitions, make and justify inferences, express generalizations, and communicate mathematical ideas and relationships.	Throughout	Throughout
1.4	apply and translate among different representations of the same problem situation or of the same mathematical concept. Model connections between problem situations that arise in disciplines other than mathematics.	Polar Coordinates and Complex Numbers Exponents and Logarithms	Section 1: Introduction: The Polar Coordinate System Section 1: Introduction: Exponential Functions
1.5	select and use appropriate technology to enhance mathematical understanding. Appropriate technology may include, but is not limited to, paper and pencil, calculator, computer, and data collection devices.	Throughout	Throughout
2	Students demonstrate understanding of and an ability to use numbers and operations.		
2.1	use and understand the real number system, its operations, notations, and the various subsystems.	Throughout	Throughout
2.2	use definitions and basic operations of the complex number	Polar Coordinates and Complex Numbers	Section 3: Operations with Complex Numbers

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	system.		
3	Students use algebraic concepts, processes, and language to model and solve a variety of real-world and mathematical problems.		
3.1	use algebra to represent patterns of change.	Discrete Mathematics	Section 2: Sequences and Series: Terms, Sums, and Limits
3.2	use basic operations with algebraic expressions.	Discrete Mathematics	Section 2: Sequences and Series: Terms, Sums, and Limits
3.3	solve algebraic equations and inequalities: linear, quadratic, exponential, logarithmic, and power.		
3.4	solve systems of algebraic equations and inequalities, including use of matrices.		
3.5	use algebraic models to solve mathematical and real-world problems.	Discrete Mathematics	Section 3: Sequences and Series: Convergence, Divergence, and Applications
4	Students demonstrate understanding of shape and an ability to use geometry.		

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4.1	construct, interpret, and draw three-dimensional objects.		
4.2	classify figures in terms of congruence and similarity and apply these relationships.		
4.3	translate between synthetic and coordinate representations.		
4.4	deduce properties of figures using transformations, coordinates, and vectors in problem solving.		
4.5	apply trigonometric ratios (sine, cosine and tangent) to problem situations involving triangles.		
5	Students demonstrate understanding of measurable attributes and an ability to use measurement processes.		
5.1	apply concepts of indirect measurements (e.g., using similar triangles to calculate a distance).		
5.2	use dimensional analysis to check reasonableness of procedures.		

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5.3	investigate systems of derived measures (e.g., km/sec, g/cm ³).		
5.4	apply the appropriate concepts of estimates in measurement, error in measurement, tolerance, and precision.		
6	The students demonstrate understanding of and an ability to use data analysis, probability, and statistics.		
6.1	use curve fitting to make predictions from data.		
6.2	apply measures of central tendency and demonstrate understanding of the concepts of variability and correlation.		
6.3	select an appropriate sampling method for a given statistical analysis.		
6.4	use experimental probability, theoretical probability, and simulation methods to represent and solve problems, including expected values.		
6.5	design a statistical experiment to study a problem and communicate the outcomes.		

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6.6	describe, in general terms, the normal curve and use its properties to answer questions about sets of data that are assumed to be normally distributed.		
7	Students demonstrate understanding of and an ability to use patterns, relations and functions.		
7.1	describe functions and their inverses using graphical, numerical, physical, algebraic, and verbal mathematical models or representations.	Exponents and Logarithms	Section 2: Logarithmic Functions
7.2	analyze the graphs of the families of polynomial, rational, power, exponential, logarithmic, and periodic functions.		
7.3	analyze the effects of parameter changes on the graphs of functions and relations, including translations.		
7.4	model real-world phenomena with a variety of functions.	Polynomial Functions Exponents and Logarithms	Section 4: Rational Equations and Radical Equations Section 1: Introduction: Exponential Functions
7.5	use graphing for parametric equations, three-dimensional equations, and recursive relations.		