(a) General requirements. Students shall be awarded one-half to one credit for successful completion of this course. Prerequisites: Algebra I, Geometry, and Algebra II.

(b) Introduction.

(1) The desire to achieve educational excellence is the driving force behind the Texas essential knowledge and skills for mathematics, guided by the college and career readiness standards. By
probability, and finance, while focusing on fluency and solid understanding, Texas will lead the way in mathematics education and prepare all Texas students for the challenges they will face in t

(2) The process standards describe ways in which students are expected to engage in the content. The placement of the process standards at the beginning of the knowledge and skills listed fo
intentional. The process standards weave the other knowledge and skills together so that students may be successful problem solvers and use mathematics efficiently and effectively in daily life
integrated at every grade level and course. When possible, students will apply mathematics to problems arising in everyday life, society, and the workplace. Students will use a problem-solving
analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution. Stu
tools such as real objects, manipulatives, paper and pencil, and technology and techniques such as mental math, estimation, and number sense to solve problems. Students will effectively comm
ideas, reasoning, and their implications using multiple representations such as symbols, diagrams, graphs, and language. Students will use mathematical relationships to generate solutions and
predictions. Students will analyze mathematical relationships to connect and communicate mathematical ideas. Students will display, explain, or justify mathematical ideas and arguments using
language in written or oral communication.

(3) Precalculus is the preparation for calculus. The course approaches topics from a function point of view, where appropriate, and is designed to strengthen and enhance conceptual understan

Knowledge and Skills Statement	Student Expectation	Breakout

Knowledge and Skills Statement	Student Expectation	Breakout
(1) Mathematical process standards. The student uses		

Knowledge and Skills Statement	Student Expectation	Breakout
(1) Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:	(C) select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems	(ii) select tools, including manipulatives as appropriate, to solve problems
(1) Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:	(C) select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems	(iii) select tools, including paper and pencil as appropriate, to solve problems

Knowledge and Skills Statement

Chapter 111. Mathematics

Knowledge and Skills Statement	Student Expectation	Breakout
(1) Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:	(D) communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate	(ix) communicate [mathematical ideas'] implications using multiple representations, including symbols as appropriate
(1) Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:	(D) communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate	(x) communicate [mathematical ideas'] implications using multiple representations, including diagrams as appropriate
(1) Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:	(D) communicate mathematical ideas, rathema3a(and l)udent uses mathematical processes to acquire and demonstrate	

Knowledge and Skills Statement	Student Expectation	Breakout
(1) Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:	(D) communicate mathematical ideas, reasoning, and their implications using multiple representations, including	

Knowledge and Skills Statement	Student Expectation	Breakout
(1) Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:	(E) create and use representations to organize, record, and communicate mathematical ideas	(ii) create representations to record mathematical ideas
(1) Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:	(E) create and use representations to organize, record, and communicate mathematical ideas	(iii) create representations to communicate mathematical ideas
(1) Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:	(E) create and use representations to organize, record, and communicate mathematical ideas	(iv) use representations to organize mathematical ideas
(1) Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:	(E) create and use representations to organize, record, and communicate mathematical ideas	(v) use representations to record mathematical ideas

Knowledge and Skills Statement	Student Expectation	Breakout
(1) Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:	(E) create and use representations to organize, record, and communicate mathematical ideas	(vi) use representations to communicate mathematical ideas

Chapter 111. Mathematics

Knowledge and Skills Statement	Student Expectation	Breakout
(1) Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:	(G) display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication	(v) justify mathematical ideas using precise mathematical language in written or oral communication
(1) Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:	(G) display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication	(vi) justify mathematical arguments using precise mathematical language in written or oral communication
(2) Functions. The student uses process standards in mathematics to explore, describe, and analyze the attributes of functions. The student makes connections between multiple representations of functions and algebraically constructs new functions. The student analyzes and uses functions to model real-world problems. The student is expected to:	(A) use the composition of two functions to model and solve real-world problems	(i) use the composition of two functions to model real-world problems

Knowledge and Skills Statement	Student Expectation	Breakout
	real-world problems	

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(2) Functions. The student uses process standards in mathematics to explore, describe, and analyze the attributes of functions. The student makes connections between multiple representations of functions and algebraically constructs new functions. The student analyzes and uses functions to model real-world problems. The student is expected to:	(D) describe syiple 0pt(D mathemat functions. representations 0nt(D representations	Tm [(()-5(2))-5(TD [.9(ic)-5so The of Tm [(()-5(2))-5(of

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(2) Functions. The student uses process standards in mathematics to explore, describe, and analyze the attributes of functions. The student makes connections between multiple representations of functions and algebraically constructs new functions. The student analyzes and uses functions to model real-world problems. The student is expected to:	(F) graph exponential, logarithmic, rational, polynomial, power of trigonometric, inverse trigonometric, and piecewise defined functions, including step functions	(iii) graph rational functions
(2) Functions. The student uses process standards in mathematics to explore, describe, and analyze the attributes of functions. The student makes connections between multiple representations of functions and algebraically constructs new functions. The student analyzes and uses functions to model real-world problems. The student is expected to:	(F) graph exponential, logarithmic, rational, polynomial, power of trigonometric, inverse trigonometric, and piecewise defined functions, including step functions	(iv) graph polynomial functions
(2) Functions. The student uses process standards in mathematics to explore, describe, and analyze the attributes of functions. The student makes connections between multiple representations of functions and algebraically constructs new functions. The student analyzes and uses functions to model real-world problems. The student is expected to:	(F) graph exponential, logarithmic, rational, polynomial, power of trigonometric, inverse trigonometric, and piecewise defined functions, including step functions	(v) graph power functions

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(2) Functions. The student uses process standards in mathematics to explore, describe, and analyze the attributes of functions. The student makes connections between multiple representations of functions and algebraically constructs new functions. The student analyzes and uses functions to model real-world problems. The student is expected to:	(F) graph exponential, logarithmic, rational, polynomial,	

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(2) Functions. The student uses process standards in mathematics to explore, describe, and analyze the attributes of		

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(2) Functions. The student uses process standards in mathematics to explore, describe, and analyze the attributes of functions. The student makes connections between multiple		

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(2) Functions. The student uses process standards in mathematics to explore, describe, and analyze the attributes of functions. The student makes connections between multiple representations of functions and algebraically constructs new functions. The student analyzes and uses functions to model real-world problems. The student is expected to:	(G) graph functions, including exponential, logarithmic, sine, cosine, rational, polynomial, and power functions and their transformations, including $af(x)$, $f(x) + d$, $f(x - c)$, $f(bx)$ for specific values of $a, b, c,$ and d, in mathematical and real-world problems	(xiii) graph functions, including power functions, in mathematical problems

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(2) Functions. The student uses process standards in mathematics to explore, describe, and analyze the attributes of functions. The student makes connections between multiple representations of functions and algebraically constructs new functions. The student analyzes and uses functions to model real-world problems. The student is expected to:	(G) graph functions, including exponential, logarithmic, sine, cosine, rational, polynomial, and power functions and their transformations, including $af(x)$, $f(x) + d$, $f(x - c)$, $f(bx)$ for specific values of a, b, c, and d, in mathematical and real-world problems	(xv) graph functions, including exponential transformations, including $af(x)$, for specific values of a, in mathematical problems
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Chapter 111. Mathematics

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(2) Functions. The student uses process standards in mathematics to explore, describe, and analyze the attributes of functions. The student makes connections between multiple representations of functions and algebraically constructs new functions. The student analyzes and uses functions to model real-world problems. The student is expected to:	(G) graph functions, including exponential, logarithmic, sine,	

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(2) Functions. The student uses process standards in mathematics to explore, describe, and analyze the attributes of functions. The student makes connections between multiple representations of functions and algebraically constructs new functions. The student analyzes and uses functions to model real-world problems. The student is expected to:	(G) graph functions, including exponential, logarithmic, sine, cosine, rational, polynomial, and power functions and their transformations, including $af(x)$, $f(x) + d$, $f(x - c)$, $f(bx)$ for specific values of a, b, c, and d, in mathematical and real-world problems	(xxiii) graph functions, including rational transformations, including $af(x)$, for specific values of a, in mathematical problems
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(2) Functions. The student uses process standards in mathematics to explore, describe, and analyze the attributes of functions. The student makes connections between multiple representations of functions and algebraically constructs new functions. The student analyzes and uses functions to model real-world problems. The student is expected to:	(G) graph functions, including exponential, logarithmic, sine, cosine, rational, polynomial, and power functions and their transformations, including *af(x), f(x) + d, f(x - c), f(bx)* for specific values of *a, b, c,* and *d*, in mathematical and real-world problems	(lxviii) graph functions, including polynomial transformations, including *f(bx)* for specific values of *b*, in real-world problems

Knowledge and Skills Statement	Student Expectation	Breakout
(2) Functions. The student uses process standards in mathematics to explore, describe, and analyze the attributes of functions. The student makes connections between multiple representations of functions and algebraically constructs new functions. The student analyzes and uses functions to model real-world problems. The student is expected to:	(G) graph functions, including exponential, logarithmic, sine, cosine, rational, polynomial, and power functions and their transformations, including *af(x), f(x) + d, f(x - c), f(bx)* for specific values of *a, b, c,* and *d*, in mathematical and real-world problems	(lxix) graph functions, including power transformations, including *f(bx)* for specific values of *b*, in mathematical problems
(2) Functions. The student uses process standards in mathematics to explore, describe, and analyze the attributes of functions. The student makes connections between multiple representations of functions and algebraically constructs new functions. The student analyzes and uses functions to model real-world problems. The student is expected to:	(G) graph functions, including exponential, logarithmic, sine, cosine, rational, polynomial, and power functions and their transformations, including *af(x), f(x) + d, f(x - c), f(bx)* for specific values of *a, b, c,* and *d*, in mathematical and real-world problems	(lxx) graph functions, power transformations, including *f(bx)* for specific values of *b*, in real-world problems
(2) Functions. The student uses process standards in mathematics to explore, describe, and analyze the attributes of functions. The student makes connections between multiple representations of functions and algebraically constructs new functions. The student analyzes and uses functions to model real-world problems. The student is expected to:	(H) graph arcsin *x* and arccos *x* and describe the limitations on the domain	(i) graph arcsin *x*

Knowledge and Skills Statement	Student Expectation	Breakout
(2) Functions. The student uses process standards in mathematics to explore, describe, and analyze the attributes of functions. The student makes connections between multiple representations of functions and algebraically constructs new functions. The student analyzes and uses functions to model real-world problems. The student is expected to:	(I) determine and analyze the key features of exponential, logarithmic, rational, polynomial, power, trigonometric, inverse trigonometric, and piecewise defined functions, including step functions such as domain, range, symmetry, relative maximum, relative minimum, zeros, asymptotes, and intervals over which the function is increasing or decreasing	(i) determine the key features of exponential functions
(2) Functions. The student uses process standards in mathematics to explore, describe, and analyze the attributes of functions. The student makes connections between multiple representations of functions and algebraically constructs new functions. The student analyzes and uses functions to model real-world problems. The student is expected to:	(I) determine and analyze the key features of exponential, logarithmic, rational, polynomial, power, trigonometric, inverse trigonometric, and piecewise defined functions, including step functions such as domain, range, symmetry, relative maximum, relative minimum, zeros, asymptotes, and intervals over which the function is increasing or decreasing	(ii) determine the key features of logarithmic functions

Knowledge and Skills Statement	Student Expectation	Breakout
(2) Functions. The student uses process standards in mathematics to explore, describe, and analyze the attributes of functions. The student makes connections between multiple representations of functions and algebraically constructs new functions. The student analyzes and uses functions to model real-world problems. The student is expected to:	(I) determine and analyze the key features of exponential,	

Knowledge and Skills Statement	Student Expectation	Breakout
(2) Functions. The student uses process standards in mathematics to explore, describe, and analyze the attributes of functions. The student makes connections between multiple representations of functions and algebraically constructs new functions. The student analyzes and uses functions to model real-world problems. The student is expected to:	(I) determine and analyze the key features of exponential, logarithmic, rational, polynomial, power, trigonometric, inverse trigonometric, and piecewise defined functions, including step functions such as domain, range, symmetry, relative maximum, relative minimum, zeros, asymptotes, and intervals over which the function is increasing or decreasing	(v) determine the key features of power functions
(2) Functions. The student uses process standards in mathematics to explore, describe, and analyze the attributes of functions. The student makes connections between multiple representations of functions and algebraically constructs new functions. The student analyzes and uses functions to model real-world problems. The student is expected to:	(I) determine and analyze the key features of exponential, logarithmic, rational, polynomial, power, trigonometric, inverse trigonometric, and piecewise defined functions, including step functions such as domain, range, symmetry, relative maximum, relative minimum, zeros, asymptotes, and intervals over which the function is increasing or decreasing	(vi) determine the key features of trigonometric functions

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Knowledge and Skills Statement	Student Expectation	Breakout
(2) Functions. The student uses process standards in mathematics to explore, describe, and analyze the attributes of functions. The student makes connections between multiple representations of functions and algebraically constructs new functions. The student analyzes and uses functions to model real-world problems. The student is expected to:	(I) determine and analyze the key features of exponential, logarithmic, rational, polynomial, power, trigonometric, inverse trigonometric, and piecewise defined functions, including step functions such as domain, range, symmetry, relative maximum, relative minimum, zeros, asymptotes, and intervals over which the function is increasing or decreasing	(xi) analyze the key features of rational functions
(2) Functions. The student uses process standards in mathematics to explore, describe, and analyze the attributes of functions. The student makes connections between multiple representations of functions and algebraically constructs new functions. The student analyzes and uses functions to model real-world problems. The student is expected to:	(I) determine and analyze the key features of exponential, logarithmic, rational, polynomial, power, trigonometric, inverse trigonometric, and piecewise defined functions, including step functions such as domain, range, symmetry, relative maximum, relative minimum, zeros, asymptotes, and intervals over which the function is increasing or decreasing	(xii) analyze the key features of polynomial functions

Knowledge and Skills Statement	Student Expectation	Breakout
(2) Functions. The student uses process standards in		

Knowledge and Skills Statement	Student Expectation	Breakout
(2) Functions. The student uses process standards in mathematics to explore, describe, and analyze the attributes of functions. The student makes connections between multiple representations of functions and algebraically constructs new functions. The student analyzes and uses functions to model real-world problems. The student is expected to:	(I) determine and analyze the key features of exponential, logarithmic, rational, polynomial, power, trigonometric, inverse trigonometric, and piecewise defined functions, including step functions such as domain, range, symmetry, relative maximum, relative minimum, zeros, asymptotes, and intervals over which the function is increasing or decreasing	(xv) analyze the key features of inverse trigonometric functions
(2) Functions. The student uses process standards in mathematics to explore, describe, and analyze the attributes of functions. The student makes connections between multiple representations of functions and algebraically constructs new functions. The student analyzes and uses functions to model real-world problems. The student is expected to:	(I) determine and analyze the key features of exponential, logarithmic, rational, polynomial, power, trigonometric, inverse trigonometric, and piecewise defined functions, including step functions such as domain, range, symmetry, relative maximum, relative minimum, zeros, asymptotes, and intervals over which the function is increasing or decreasing	(xvi) analyze the key features of piecewise defined functions, including step functions

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Knowledge and Skills Statement	Student Expectation	Breakout
(2) Functions. The student uses process standards in mathematics to explore, describe, and analyze the attributes of		

Knowledge and Skills Statement	Student Expectation	Breakout
(2) Functions. The student uses process standards in		

Knowledge and Skills Statement	Student Expectation	Breakout
(2) Functions. The student uses process standards in mathematics to explore, describe, and analyze the attributes of functions. The student makes connections between multiple representations of functions and algebraically constructs new functions. The student analyzes and uses functions to model real-world problems. The student is expected to:	(J) analyze and describe end behavior of functions, including exponential, logarithmic, rational, polynomial, and power functions, using infinity notation to communicate this characteristic in mathematical and real-world problems	(xiii) describe end behavior of functions, including logarithmic functions, using infinity notation to communicate this characteristic in mathematical problems
(2) Functions. The student uses process standards in mathematics to explore, describe, and analyze the attributes of functions. The student makes connections between multiple representations of functions and algebraically constructs new functions. The student analyzes and uses functions to model real-world problems. The student is expected to:	(J) analyze and describe end behavior of functions, including exponential, logarithmic, rational, polynomial, and power functions, using infinity notation to communicate this characteristic in mathematical and real-world problems	(xiv) describe end behavior of functions, including logarithmic functions, using infinity notation to communicate this characteristic in real-world problems

Knowledge and Skills Statement	Student Expectation	Breakout
(2) Functions. The student uses process standards in mathematics to explore, describe, and analyze the attributes of functions. The student makes connections between multiple representations of functions and algebraically constructs new functions. The student analyzes and uses functions to model real-world problems. The student is expected to:	(J) analyze and describe end behavior of functions, including exponential, logarithmic, rational, polynomial, and power functions, using infinity notation to communicate this characteristic in mathematical and real-world problems	(xv) describe end behavior of functions, including rational functions, using infinity notation to communicate this characteristic in mathematical problems
(2) Functions. The student uses process standards in mathematics to explore, describe, and analyze the attributes of functions. The student makes connections between multiple representations of functions and algebraically constructs new functions. The student analyzes and uses functions to model real-world problems. The student is expected to:	(J) analyze and describe end behavior of functions, including exponential, logarithmic, rational, polynomial, and power functions, using infinity notation to communicate this characteristic in mathematical and real-world problems	(xvi) describe end behavior of functions, including rational functions, using infinity notation to communicate this characteristic in real-world problems

Knowledge and Skills Statement	Student Expectation	Breakout
(2) Functions. The student uses process standards in mathematics to explore, describe, and analyze the attributes of functions. The student makes connections between multiple representations of functions and algebraically constructs new functions. The student analyzes and uses functions to model real-world problems. The student is expected to:	(J) analyze and describe end behavior of functions, including exponential, logarithmic, rational, polynomial, and power functions, using infinity notation to communicate this characteristic in mathematical and real-world problems	(xix) describe end behavior of functions, including power functions, using infinity notation to communicate this characteristic in mathematical problems
(2) Functions. The student uses process standards in mathematics to explore, describe, and analyze the attributes of functions. The student makes connections between multiple representations of functions and algebraically constructs new functions. The student analyzes and uses functions to model real-world problems. The student is expected to:	(J) analyze and describe end behavior of functions, including exponential, logarithmic, rational, polynomial, and power functions, using infinity notation to communicate this characteristic in mathematical and real-world problems	(xx) describe end behavior of functions, including power functions, using infinity notation to communicate this characteristic in real-world problems
(2) Functions. The student uses process standards in mathematics to explore, describe, and analyze the attributes of functions. The student makes connections between multiple representations of functions and algebraically constructs new functions. The student analyzes and uses functions to model real-world problems. The student is expected to:	(K) analyze characteristics of rational functions and the behavior of the function around the asymptotes, including horizontal, vertical, and oblique asymptotes	(i) analyze characteristics of rational functions

Knowledge and Skills Statement	Student Expectation	Breakout
(2) Functions. The student uses process standards in mathematics to explore, describe, and analyze the attidesc2710..euial		
mathematics to explore, describe, and analyze the attidesc2710..euial		

Knowledge and Skills Statement	Student Expectation	Breakout
(2) Functions. The student uses process standards in mathematics to explore, describe, and analyze the attributes of functions. The student makes connections between multiple representations of functions and algebraically constructs new functions. The student analyzes and uses functions to model real-world problems. The student is expected to:	(L) determine various types of discontinuities in the interval (-∞, ∞) as they relate to functions and explore the limitations of the graphing calculator as it relates to the behavior of the function around discontinuities	(i) determine various types of discontinuities in the interval (-∞, ∞) as they relate to functions
(2) Functions. The student uses process standards in mathematics to explore, describe, and analyze the attributes of functions. The student makes connections between multiple representations of functions and algebraically constructs new functions. The student analyzes and uses functions to model real-world problems. The student is expected to:	(L) determine various types of discontinuities in the interval (-∞, ∞) as they relate to functions and explore the limitations of the graphing calculator as it relates to the behavior of the function around discontinuities	(ii) explore the limitations of the graphing calculator as it relates to the behavior of the function around discontinuities
(2) Functions. The student uses process standards in mathematics to explore, describe, and analyze the attributes of functions. The student makes connections between multiple representations of functions and algebraically constructs new functions. The student analyzes and uses functions to model real-world problems. The student is expected to:	(M) describe the left-sided behavior and the right-sided behavior of the graph of a function around discontinuities	(i) describe the left-sided behavior of the graph of a function around discontinuities

Knowledge and Skills Statement	Student Expectation	Breakout
		(M) Tz analy411 Td [((0f3uscn 6oblem)-60Au3z(een m)-multiple
(2) Functions. The student uses process standards in mathematics to explore, describe, and analyze the attributes of functions. The student makes connections between multiple representations of functions and algebraically constructs new functions. The student analyzes and uses functions to model real-world problems. The student is expected to:	real-world problems. functions and algebraicn 28.56 534Nn 28.56 534Nn 8.9:	
		functions. T sq10.8(,89 > M)3.4(n(o:)]TJ4)-547udMng) 4t47da4snaly411d81(r1

Knowledge and Skills Statement	Student Expectation	Breakout
(2) Functions. The student uses process standards in mathematics to explore, describe, and analyze the attributes of functions. The student makes connections between multiple representations of functions and algebraically constructs new functions. The student analyzes and uses functions to model real-world problems. The student is expected to:	(N) analyze situations modeled by functions, including exponential, logarithmic, rational, polynomial, and power functions, to solve real-world problems	(iii) analyze situations modeled by functions, including rational functions, to solve real-world problems
(2) Functions. The student uses process standards in mathematics to explore, describe, and analyze the attributes of functions. The student makes connections between multiple representations of functions and algebraically constructs new functions. The student analyzes and uses functions to model real-world problems. The student is expected to:	(N) analyze situations modeled by functions, including exponential, logarithmic, rational, polynomial, and power functions, to solve real-world problems	(iv) analyze situations modeled by functions, including polynomial functions, to solve real-world problems
(2) Functions. The student uses process standards in mathematics to explore, describe, and analyze the attributes of functions. The student makes connections between multiple representations of functions and algebraically constructs new functions. The student analyzes and uses functions to model real-world problems. The student is expected to:	(N) analyze situations modeled by functions, including exponential, logarithmic, rational, polynomial, and power functions, to solve real-world problems	(v) analyze situations modeled by functions, including power functions, to solve real-world problems

Knowledge and Skills Statement

Knowledge and Skills Statement	Student Expectation	Breakout
(2) Functions. The student uses process standards in mathematics to explore, describe, and analyze the attributes of functions. The student makes connections between multiple representations of functions and algebraically constructs new functions. The student analyzes and uses functions to model real-world problems. The student is expected to:	(P) determine the values of the trigonometric functions at the special angles and relate them in mathematical and real-world problems	(iii) relate them in real-world problems
(3) Relations and geometric reasoning. The student uses the process standards in mathematics to model and make connections between algebraic and geometric relations. The student is expected to:	(A) graph a set of parametric equations	(i) graph a set of parametric equations
(3) Relations and geometric reasoning. The student uses the process standards in mathematics to model and make connections between algebraic and geometric relations. The student is expected to:	(B) convert parametric equations into rectangular relations and convert rectangular relations into parametric equations	(i) convert parametric equations into rectangular relations

Knowledge and Skills Statement	Student Expectation	Breakout

Knowledge and Skills Statement	Student Expectation	Breakout
(3) Relations and geometric reasoning. The student uses the process standards in mathematics to model and make connections between algebraic and geometric relations. The student is expected to:	(C) use parametric equations to model and solve mathematical and real-world problems	(iv) use parametric equations to solve real-world problems
(3) Relations and geometric reasoning. The student uses the process standards in mathematics to model and make connections between algebraic and geometric relations. The student is expected to:	(D) graph points in the polar coordinate system and convert between rectangular coordinates and polar coordinates	(i) graph points in the polar coordinate system
(3) Relations and geometric reasoning. The student uses the process standards in mathematics to model and make connections between algebraic and geometric relations. The student x.Fa/19(ex)-5(pec)-5(t)-8.8(ed t)-8.9(o:)]TJ EMC /P <</MCID 34 >>BDC /TT3 1 Tf 0.006 Tc -0.01 Tw 24.63 3.863 Td [(()18.2(D)2())10.2(gr)10.3(aph poi)8.8(nt)10.1(s)-0.9(i)8.9(n t)10.		

Knowledge and Skills Statement	Student Expectation	Breakout
(3) Relations and geometric reasoning. The student uses the process standards in mathematics to model and make connections between algebraic and geometric relations. The student is expected to:	(E) graph polar equations by plotting points and using technology	(ii) graph polar equations by using technology
(3) Relations and geometric reasoning. The student uses the process standards in mathematics to model and make connections between algebraic and geometric relations. The student is expected to:		

Knowledge and Skills Statement	Student Expectation	Breakout
(4) Number and measure. The student uses process standards in mathematics to apply appropriate techniques, tools, and formulas to calculate measures in mathematical and real-world problems. The student is expected to:	(E) determine the value of trigonometric ratios of angles and solve problems involving trigonometric ratios in mathematical and real-world problems	(i) determine the value of trigonometric ratios of angles
(4) Number and measure. The student uses process standards in mathematics to apply appropriate techniques, tools, and formulas to calculate measures in mathematical and real-world problems. The student is expected to:	(E) determine the value of trigonometric ratios of angles and solve problems involving trigonometric ratios in mathematical and real-world problems	(ii) solve problems involving trigonometric ratios in mathematical problems
(4) Number and measure. The student uses process standards in mathematics to apply appropriate techniques, tools, and formulas to calculate measures in mathematical and real-world problems. The student is expected to:	(E) determine the value of trigonometric ratios of angles and solve problems involving trigonometric ratios in mathematical and real-world problems	(iii) solve problems involving trigonometric ratios in real-world problems
(4) Number and measure. The student uses process standards in mathematics to apply appropriate techniques, tools, and formulas to calculate measures in mathematical and real-world problems. The student is expected to:	(F) use trigonometry in mathematical and real-world problems, including directional bearing	(i) use trigonometry in mathematical, including directional bearing

Knowledge and Skills Statement	Student Expectation	Breakout

Knowledge and Skills Statement	Student Expectation	Breakout
(4) Number and measure. The student uses process standards in mathematics to apply appropriate techniques, tools, and formulas to calculate measures in mathematical and real-world problems. The student is expected to:	(H) use the Law of Cosines in mathematical and real-world problems	(i) uss

Knowledge and Skills Statement	Student Expectation	Breakout
(4) Number and measure. The student uses process standards in mathematics to apply appropriate techniques, tools, and formulas to calculate measures in mathematical and real-world problems. The student is expected to:	(J) represent the addition of vectors and the multiplication of a vector by a scalar geometrically and symbolically	(ii) represent the addition of vectors symbolically
(4) Number and measure. The student uses process standards in mathematics to apply appropriate techniques, tools, and formulas to calculate measures in mathematical and real-world problems. The student is expected to:	(J) represent the addition of vectors and the multiplication of a vector by a scalar geometrically and symbolically	(iii) represent the multiplication of a vector by a scalar geometrically
(4) Number and measure. The student uses process standards in mathematics to apply appropriate techniques, tools, and formulas to calculate measures in mathematical and real-world problems. The student is expected to:	(J) represent the addition of vectors and the multiplication of a vector by a scalar geometrically and symbolically	(iv) represent the multiplication of a vector by a scalar symbolically
(4) Number and measure. The student uses process standards in mathematics to apply appropriate techniques, tools, and formulas to calculate measures in mathematical and real-world problems. The student is expected to:	(K) apply vector addition and multiplication of a vector by a scalar in mathematical and real-world problems	(i) apply vector addition in mathematical problems

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Knowledge and Skills Statement	Student Expectation	Breakout
(5) Algebraic reasoning. The student uses process standards in mathematics to evaluate expressions, describe patterns, formulate models, and solve equations and inequalities using properties, procedures, or algorithms. The student is expected to:	(A) evaluate finite sums and geometric series, when possible, written in sigma notation	(i) evaluate finite sums written in sigma notation
(5) Algebraic reasoning. The student uses process standards in mathematics to evaluate expressions, describe patterns, formulate models, and solve equations and inequalities using properties, procedures, or algorithms. The student is expected to:	(A) evaluate finite sums and geometric series, when possible, written in sigma notation	(ii) evaluate geometric series, when possible, written in sigma notation
(5) Algebraic reasoning. The student uses process standards in mathematics to evaluate expressions, describe patterns, formulate models, and solve equations and inequalities using properties, procedures, or algorithms. The student is expected to:	(B) represent arithmetic sequences and geometric sequences using recursive formulas	(i) represent arithmetic sequences using recursive formulas

Knowledge and Skills Statement	Student Expectation	Breakout
(5) Algebraic reasoning. The student uses process standards in mathematics to evaluate expressions, describe patterns, formulate models, and solve equations and inequalities using properties, procedures, or algorithms. The student is expected to:	(B) represent arithmetic sequences and geometric sequences using recursive formulas	(ii) represent geometric sequences using recursive formulas
(5) Algebraic reasoning. The student uses process standards in mathematics to evaluate expressions, describe patterns, formulate models, and solve equations and inequalities using properties, procedures, or algorithms. The student is expected to:	(C) calculate the n^{th} term and the n^{th} partial sum of an arithmetic series in mathematical and real-world problems	(i) calculate the n^{th} term of an arithmetic series in mathematical problems
(5) Algebraic reasoning. The student uses process standards in mathematics to evaluate expressions, describe patterns, formulate models, and solve equations and inequalities using properties, procedures, or algorithms. The student is expected to:	(C) calculate the n^{th} term and the n^{th} partial sum of an arithmetic series in mathematical and real-world problems	(ii) calculate the n^{th} term of an arithmetic series in real-world problems

Knowledge and Skills Statement	Student Expectation	Breakout
(5) Algebraic reasoning. The student uses process standards in mathematics to evaluate expressions, describe patterns, formulate models, and solve equations and inequalities using properties, procedures, or algorithms. The student is expected to:	(C) calculate the n^{th} term and the n^{th} partial sum of an arithmetic series in mathematical and real-world problems	(iii) calculate the n^{th} partial sum of an arithmetic series in mathematical problems
(5) Algebraic reasoning. The student uses process standards in mathematics to evaluate expressions, describe patterns, formulate models, and solve equations and inequalities using properties, procedures, or algorithms. The student is expected to:	(C) calculate the n^{th} term and the n^{th} partial sum of an arithmetic series in mathematical and real-world problems	(iv) calculate the n^{th} partial sum of an arithmetic series in real-world problems
(5) Algebraic reasoning. The student uses process standards in mathematics to evaluate expressions, describe patterns, formulate models, and solve equations and inequalities using properties, procedures, or algorithms. The student is expected to:	(D) represent arithmetic series and geometric series using sigma notation	(i) represent arithmetic series using sigma notation

Knowledge and Skills Statement	Student Expectation	Breakout
(5) Algebraic reasoning. The student uses process standards in mathematics to evaluate expressions, describe patterns, formulate models, and solve equations and inequalities using properties, procedures, or algorithms. The student is expected to:	(D) represent arithmetic series and geometric series using sigma notation	(ii) represent geometric series using sigma notation
(5) Algebraic reasoning. The student uses process standards in mathematics to evaluate expressions, describe patterns, formulate models, and solve equations and inequalities using properties, procedures, or algorithms. The student is expected to:	(E) calculate the n^{th} term of a geometric series, the n^{th} partial sum of a geometric series, and sum of an infinite geometric series when it exists	(i) calculate the n^{th} term of a geometric series
(5) Algebraic reasoning. The student uses process standards in mathematics to evaluate expressions, describe patterns, formulate models, and solve equations and inequalities using properties, procedures, or algorithms. The student is expected to:	(E) calculate the n^{th} term of a geometric series, the n^{th} partial sum of a geometric series, and sum of an infinite geometric series when it exists	(ii) calculate the n^{th} partial sum of a geometric series

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Knowledge and Skills Statement	Student Expectation	Breakout
(5) Algebraic reasoning. The student uses process standards in mathematics to evaluate expressions, describe patterns, formulate models, and solve equations and inequalities using properties, procedures, or algorithms. The student is expected to:	(H) generate and solve logarithmic equations in mathematical and real-world problems	(i) generate logarithmic equations in mathematical problems
(5) Algebraic reasoning. The student uses process standards in mathematics to evaluate expressions, describe patterns, formulate models, and solve equations and inequalities using properties, procedures, or algorithms. The student is expected to:	(H) generate and solve logarithmic equations in mathematical and real-world problems	(ii) generate logarithmic equations in real-world problems
(5) Algebraic reasoning. The student uses process standards in mathematics to evaluate expressions, describe patterns, formulate models, and solve equations and inequalities using properties, procedures, or algorithms. The student is expected to:	(H) generate and solve logarithmic equations in mathematical and real-world problems	(iii) solve logarithmic equations in mathematical problems

Knowledge and Skills Statement	Student Expectation	Breakout
(5) Algebraic reasoning. The student uses process standards in mathematics to evaluate expressions, describe patterns, formulate models, and solve equations and inequalities using properties, procedures, or algorithms. The student is expected to:	(H) generate and solve logarithmic equations in mathematical and real-world problems	(iv) solve logarithmic equations in real-world problems
(5) Algebraic reasoning. The student uses process standards in mathematics to evaluate expressions, describe patterns, formulate models, and solve equations and inequalities using properties, procedures, or algorithms. The student is expected to:	(I) generate and solve exponential equations in mathematical and real-world problems	(i) generate exponential equations in mathematical problems
(5) Algebraic reasoning. The student uses process standards in mathematics to evaluate expressions, describe patterns, formulate models, and solve equations and inequalities using properties, procedures, or algorithms. The student is expected to:	(I) generate and solve exponential equations in mathematical and real-world problems	(ii) generate exponential equations in real-world problems

Knowledge and Skills Statement	Student Expectation	Breakout
(5) Algebraic reasoning. The student uses process standards in mathematics to evaluate expressions, describe patterns, formulate models, and solve equations and inequalities using properties, procedures, or algorithms. The student is expected to:	(D) generate and solve exponential equations in mathematical and real-world problems	(iii) solve exponential equations in mathematical problems
(5) Algebraic reasoning. The student uses process standards in mathematics to evaluate expressions, describe patterns, formulate models, and solve equations and inequalities using properties, procedures, or algorithms. The student is expected to:	(D) generate and solve exponential equations in mathematical and real-world problems	(iv) solve exponential equations in real-world problems
(5) Algebraic reasoning. The student uses process standards in		

Knowledge and Skills Statement	Student Expectation	Breakout
(5) Algebraic reasoning. The student uses process standards to mathematics to evaluate expressions, describe patterns, formulate models, and solve equations and inequalities using properties, procedures, or algorithms. The student is expected to:	(J) solve polynomial equations with real coefficients by applying a variety of techniques in mathematical and real-world problems	(ii) solve polynomial equations with real coefficients by applying a variety of techniques in real-world problems
(5) Algebraic reasoning. The student uses process standards to mathematics to evaluate expressions, describe patterns, formulate models, and solve equations and inequalities using properties, procedures, or algorithms. The student is expected to:	(K) solve polynomial inequalities with real coefficients by applying a variety of techniques and write the solution set of the polynomial inequality in interval notation in mathematical and real-world pr	uti4a7p not(5012 714.72 Tm [(()10.2(K)8.9())10.2(s)-0.8(ol)8.8(v)-0.8(e pol)8.9(y)26.5(nom)17.1(i)8.8(al)8.8(i)8.8(ne

Knowledge and Skills Statement	Student Expectation	Breakout

Knowledge and Skills Statement	Student Expectation	Breakout
(5) Algebraic reasoning. The student uses process standards in mathematics to evaluate expressions, describe patterns, formulate models, and solve equations and inequalities using properties, procedures, or algorithms. The student is expected to:	(L) solve rational inequalities with real coefficients by applying a variety of techniques and write the solution set of the rational inequality in interval notation in mathematical and real-world problems	(iii) write the solution set of the rational inequality in interval notation in real-world problems
(5) Algebraic reasoning. The student uses process standards in mathematics to evaluate expressions, describe patterns, formulate models, and solve equations and inequalities using properties, procedures, or algorithms. The student is expected to:	(M) use trigonometric identities such as reciprocal, quotient, Pythagorean, cofunctions, even/odd, and sum and difference identities for cosine and sine to simplify trigonometric expressions	(i) use trigonometric identities for cosine to simplify trigonometric expressions
(5) Algebraic reasoning. The student uses process standards in mathematics to evaluate expressions, describe patterns, formulate models, and solve equations and inequalities using properties, procedures, or algorithms. The student is expected to:	(M) use trigonometric identities such as reciprocal, quotient, Pythagorean, cofunctions, even/odd, and sum and difference identities for cosine and sine to simplify trigonometric expressions	(ii) use trigonometric identities for sine to simplify trigonometric expressions

Knowledge and Skills Statement	Student Expectation	Breakout
(5) Algebraic reasoning. The student uses process standards in mathematics to evaluate expressions, describe patterns, formulate models, and solve equations and inequalities using properties, procedures, or algorithms. The student is expected to:	(M) generate and solve trigonometric equations in mathematical and real-world problems	(i) generate trigonometric equations in mathematical problems
(5) Algebraic reasoning. The student uses process standards in mathematics to evaluate expressions, describe patterns, formulate models, and solve equations and inequalities using properties, procedures, or algorithms. The student is expected to:	(M) generate and solve trigonometric equations in mathematical and real-world problems	(ii) generate trigonometric equations in real-world problems
(5) Algebraic reasoning. The student uses process standards in mathematics to evaluate expressions, describe patterns, formulate models, and solve equations and inequalities using properties, procedures, or algorithms. The student is expected to:	(M) generate and solve trigonometric equations in mathematical and real-world problems	(iii) solve trigonometric equations in mathematical problems

Knowledge and Skills Statement	Student Expectation	Breakout
(5) Algebraic reasoning. The student uses process standards in mathematics to evaluate expressions, describe patterns, formulate models, and solve equations and inequalities using properties, procedures, or algorithms. The student is expected to:	(M) generate and solve trigonometric equations in mathematical and real-world problems	(iv) solve trigonometric equations in real-world problems