spring ISD
CURRICULUM AND INSTRUCTION

PreCalculus/12th Grade
Scope & Sequence

1st Six Weeks (25 Days) 8/14/19 to 9/19/19	2nd Six Weeks (27 Days) 9/24/19 to 11/1/19
❖ **Unit 0: The First Five Days (5 Days: Aug 14 - Aug 20)** ➢ Big Ideas: "Who am I in this learning?" ➢ Important Concepts: · Create Social Contracts, Discuss Shared Voice, · Classroom Routines, · Calculator Management · Stations: procedures, roles and expectations. ➢ Process Standards: PC..1E, PC.1F, PC.1G ❖ **Unit 1: Parent Functions & Trigonometry Basics (20 Days: Aug 21- Sep 19)** ➢ Big Ideas: "What are the basic functions, and how do I examine the key features of their graphs?" ➢ Important Concepts: · Graph parent functions · Determine and analyze the key features · Analyze and describe end behavior of functions · Determine various types of discontinuities ➢ Readiness TEKS: PC. 2A, PC. 2D, PC.2F, PC. 2G, PC.2I, PC.2J, PC.2L ➢ Supporting TEKS: PC. 2B, PC. 2C **Processing Standards: (PC. 1C thru PC. 1G) Taught Throughout**	❖ **Unit 2: Trigonometry & Unit Circle (27 Days: Sept 24 - Nov 1)** ➢ Big Ideas: "How do the unit circle and graphs of the trig functions correspond?" "What are the key attributes of trigonometric functions?" "How do I use trig identities to simplify expressions and solve equations?" ➢ Important Concepts: · Represent angles in radians or degrees · Determine the value of trigonometric ratios · Determine the values of the trigonometric functions at the special angles · Determine the relationship between the unit circle · Describe the relationship between degree and radian · Graph functions, including exponential, logarithmic, sine, cosine, rational, polynomial, and power · functions and their transformations in mathematical and real-world problems; · Graph arcsin *x* and arccos *x* and describe the limitations on the domain; · Determine and analyze the key features of trigonometric functions · Use trigonometric identities to simplify trigonometric expressions · Generate and solve trigonometric equations · Sinusoidal Modeling · Use the Law of Sines to solve real world problems · Use the Law of Cosine to solve real world problems ➢ Readiness TEKS: PC. 2G, PC. 2I, PC.4A, PC.4B, PC.4C, PC.4D, PC.4E, PC. 2P ➢ Supporting TEKS: PC. 2H, PC. 5M, PC. 5N **Processing Standards: (PC. 1C thru PC. 1G) Taught Throughout**

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3rd Six Weeks (26 Days) 11/6/19 to 12/19/19	4th Six Weeks (31 Days) 1/7/19 to 2/21/19
❖ **Unit 3: Rational Functions, Equations and Inequalities (14 Days: Nov 6 - Dec 3)** ➢ Big Ideas: "What are the key characteristics of rational functions, equations and inequalities and the behavior of rational functions?" ➢ Important Concepts: • Analyze characteristics of rational functions • Solve rational inequalities with real coefficients • Describe the left-sided behavior and the right-sided behavior of the graph of a function around discontinuities ➢ Readiness TEKS: PC.2K, PC.2G ➢ Supporting TEKS: PC.2M, PC.5L ❖ **Unit 4: Logarithmic/ Exponential Functions and Equations (12 Days: Dec 4 - Dec 19)** ➢ Big Ideas: "How do I make and solve exponential equations in mathematical and real-world problems?" ➢ Important Concepts: • Generate and solve logarithmic equations • Generate and solve exponential equations • Graph logarithmic and exponential functions • Graph logarithmic and exponential functions including their transformations • Determine and analyze the key features of exponential and logarithmic • Analyze and describe end behavior of functions • Generate and solve logarithmic in the real world • Generate and solve exponential in the real world ➢ Readiness TEKS: PC.5G, PC.5H, PC.5I, PC.2F PC.2J ➢ Supporting TEKS: **Processing Standards: Taught Throughout**	❖ **Unit 0: The First Five Days (5 Days: Jan 7 - Jan 13)** ➢ Big Ideas: "Who am I in this learning?" ➢ Important Concepts: • Create Social Contracts, Discuss Shared Voice, • Classroom Routines, • Calculator Management • Stations: procedures, roles and expectations. ➢ Process Standards: PC.1A,PC. 1B , PC.1C, PC.1D, PC.1E ,PC. 1F, PC.1G ❖ **Unit 5: Vectors (10 Days: Jan 14 - Jan 28)** ➢ Big Ideas: "How do I define vectors in component form and perform vector operations?" ➢ Important Concepts: • Use vectors to model situations • Represent the addition of vectors and the multiplication of a vector • Apply vector addition and multiplication of a vector by a scalar ➢ Readiness TEKS: PC.4F ➢ Supporting TEKS: PC.4I, PC.4J, PC.4K ❖ **Unit 6: Parametric & Polar Equations (16 Days: Jan 29 - Feb 21)** ➢ Big Ideas: "How do I graph and convert parametric and polar equations?" ➢ Important Concepts: • Areas of Polygons • Areas & Perimeter of Similar Figures • Trigonometry and Area • Surface Area and Volume ➢ Readiness TEKS: ➢ Supporting TEKS: PC.3A, PC.3B, PC.3C, PC.3D, PC.3E **Processing Standards: Taught Throughout**

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5th Six Weeks (33 Days) 2/24/19 to 4/17/19	6th Six Weeks (31 Days) 4/20/19 to 6/2/19
❖ **Unit 7: Polynomials (15 Days: Feb 24 - Mar 23)** ➢ Big Ideas: "How do I solve polynomial equations and inequalities and extend to real world problems?" ➢ Important Concepts: • Determine an inverse function • Graph functions • Use composite functions to model real world problems • Solve polynomial equations with real coefficients • Graph polynomial and power functions including their transformations • Determine and analyze the key features of polynomial and power functions • Solve polynomial equations and inequalities with real coefficients • Analyze and describe end behavior of functions ➢ Readiness TEKS: PC.2A, PC.2D, PC.2E, PC.2F, PC.2G, PC.2I, PC.2J, PC.2N, PC.5J, PC.5K ➢ Supporting TEKS: PC.2B, PC.2C ❖ **Unit 8: Conic, Sequence & Series (18 Days: Mar 24 - Apr 17)** ➢ Big Ideas: "How do I use the characteristics of conics to write equations?" "How do I represent sequences and series?" ➢ Important Concepts: • Determine the conic section formed when a plane intersects a double-napped cone • Use the characteristics of an ellipse to write the equation of an ellipse • Use the characteristics to hyperbola to write the equation of a hyperbola • Evaluate finite sums and geometric series • Represent arithmetic and geometric sequences using recursive formulas • Apply the binomial theorem	❖ **Unit 9: Extensions of PreCalculus (31 Days: Apr 20 - Jun 1)** ➢ Big Ideas: "How do I extend PreCalculus skills to gear up for College mathematics courses through the study of complex concepts like conics and series?" ➢ Important Concepts: • Probability • Statistics • Limits • Derivatives • Integrals ➢ Process Standards: PC. 1A, PC. 1D, PC. 1E, PC. 1G, **Processing Standards: Taught Throughout**

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▪ Permutation ▪ Commutation ➢ Readiness TEKS: ➢ Supporting TEKS: PC.3F, PC.3G, PC.3H, PC.3I, PC.5A, PC.5B, PC.5C, PC.5D, PC.5E, PC.5F **Processing Standards: Taught Throughout**	