Course Name: Pre AP Precalculus

Unit Name: Unit 1: Functions

Time Frame:	One week
Unit Standards	C.1.a. Identify and graph piecewise functions, including greatest integer, step, and absolute value functions b. Identify, graph, and write equations for inverses and transformations of various functions—including polynomial, rational, radical, absolute value, and trigonometric—with and without technology E.2.a. Use algebraic tests to determine whether the graph of a relation is symmetrical b. Classify functions as even, odd, or neither
Unit Essential Questions	What do functions that exhibit symmetry look like graphically? How can we determine continuity and average rates of change of functions? How are limits used to describe end behavior of functions? How do we find inverse functions algebraically and graphically?
Unit Essential Vocabulary	1. limit 2. end behavior 3. composition 4. inverse relation 5. inverse function 6. parametric equation 7. parameter 8. parametric curve
Resources	Textbook Kuta Worksheet Builder Examview
Assessment(s)	Mid Chapter Quiz **Chapter Test** A – B – C – D – F –

Course Name:	Pre AP Precalculus

Unit Name:	Unit 2: Polynomials

Time Frame:	Two weeks
Unit Standards	E. Exploring Polynomial Expressions, Equations, and Functions 1. Expressions and Equations a. Solve polynomial equations using a variety of methods (e.g., factoring, rational roots theorem) b. Use technology to approximate the real roots of a polynomial equation 2. Functions a. Use algebraic tests to determine whether the graph of a relation is symmetrical b. Classify functions as even, odd, or neither c. Graph general polynomial functions from given characteristics such as degree, sign of lead coefficient, and roots and their multiplicity d. Find the rational roots, real roots, and complex roots of a polynomial function e. Describe the binomial theorem and Pascal's triangle
Unit Essential Questions	How can you solve a higher degree polynomial function? If you know one of the zeros how can you determine the others? How can you find all real zeros when the leading coefficient is 1? How can you determine the possible number of positive, negative, and imaginary zeros of a polynomial function? When does a graph have a local maximum or local minimum?
Unit Essential Vocabulary	1 .Zero 9. Irrational conjugates 2. Solution 10.Complex conjugates 3. Intercept 11. Descartes' Rule of signs 4. Polynomial long division 12. Local minimum 5. Synthetic Division 13. Local maximum 6.Constant term 7.Leading coefficient 8. Rational Zeros
Resources	Textbook Kuta Worksheet Builder Examview
Assessment(s)	Mid Chapter Quiz **Chapter Test** A – B – C – D – F –

Course Name: Pre AP Precalculus	
Unit Name: Unit 3: Rational Functions	
Time Frame:	Two weeks
Unit Standards	E.1.a. Solve polynomial equations using a variety of methods (e.g., factoring, rational roots theorem) b. Use technology to approximate the real roots of a polynomial equation E.2.c. Graph general polynomial functions from given characteristics such as degree, sign of lead coefficient, and roots and their multiplicity d. Find the rational roots, real roots, and complex roots of a polynomial function F.1.a. Graph and analyze radical functions, including square root and cube root functions, with and without technology b. Graph rational functions using intercepts, symmetry, asymptotes, and removable discontinuities
Unit Essential Questions	What are the steps for graphing a general rational function? How do you find x and y intercepts? How do you find vertical, horizontal, and slant asymptotes? When do you have a removable discontinuity?
Unit Essential Vocabulary	1. Intercepts 2. Vertical Asymptotes 3. Horizontal asymptotes 4. Slant Asymptotes 5. Removable Discontinuity
Resources	Textbook Kuta Worksheet Builder Examview
Assessment(s)	Mid Chapter Quiz **Chapter Test** A – B – C – D – F –

Course Name: Pre AP Precalculus

Unit Name: Unit 4: Exponential & Logarithmic Functions

Time Frame:	One week
Unit Standards	F.2. a. Use properties of exponents to simplify and evaluate expressions involving real exponents b. Use properties of logarithms to simplify and evaluate expressions involving logarithms c. Solve equations involving real exponents d. Solve equations with variable exponents by using logarithms e. Use the natural base e to evaluate exponential expressions, solve exponential equations, and graph exponential functions f. Solve exponential and logarithmic equations and real-world problems involving exponential and logarithmic equations (e.g., compound interest, exponential growth and decay)
Unit Essential Questions	How do we evaluate, analyze, and graph exponential and logarithmic functions? How can we apply the properties of logarithms? How do we solve exponential and logarithmic equations? What is the relationship between exponential and logarithm functions? How can you use a calculator to evaluate a logarithm when the base is not 10 or e? Why do logarithmic equations sometimes have extraneous solutions?
Unit Essential Vocabulary	1. exponential function 9. Extraneous solution 2. natural base 10. Exponential equation 3. logarithm 4. natural logarithm 5. asymptote 6.common logarithm 7.base 8.logarithm equation
Resources	Textbook Kuta Worksheet Builder Examview
Assessment(s)	Mid Chapter Quiz **Chapter Test** A – B – C – D – F –

Course Name: Pre AP Precalculus	

Unit Name: Unit 5: Trigonometric Functions, Equations, & Their Inverses	

Time Frame:	Five weeks
Unit Standards	F.3.a. Use various methods to find the area of a triangle (e.g., given the length of two sides and the included angle) b. Graph tangent, cotangent, secant, and cosecant functions and their transformations c. State the amplitude, period, phase, and vertical translation of transformations of the sine and cosine functions d. Graph transformations (e.g., vertical and horizontal translations, reflections, stretches) of the sine and cosine functions e. Determine periodicity and amplitude from graphs, stretch and shrink graphs both vertically and horizontally, and translate graphs f. Graph and write the equations of sine and cosine functions given the amplitude, period, phase shift, and vertical translation; use the functions to model real-life situations (e.g., spring problems, ocean tides) g. Identify the sum and difference identities for the sine, cosine, and tangent functions; apply the identities to solve mathematical problems h. Derive, identify, and apply double-angle and half-angle formulas to solve mathematical problems i. Apply the fundamental trigonometric identities, the double-angle and half-angle identities, and the sum and difference identities to simplify and evaluate trigonometric expressions and prove trigonometric identities j. Use trigonometric identities or technology to solve trigonometric equations k. Identify and graph inverse sine, cosine, and tangent functions√ l. Use and evaluate inverse sine, cosine, and tangent functions to solve trigonometric equations l.1.j. Graph parametric equations and write parametric equations of lines
Unit Essential Questions	How is trigonometry used to solve right triangles? How do we find values of trigonometric functions for any angle? How do we graph trigonometric functions and their inverses? How do we use and verify trigonometric identities? How do we solve trigonometric equations? How can we use sum and difference identities to evaluate trigonometric expressions and solve equations? How do we use the double-angle and half-angle identities to evaluate expressions and solve equations?
Unit Essential Vocabulary	1. radian 9. reduction identity 2. coterminal angles 10. parameter 3. amplitude 11. parametric curve 4. frequency 5. arcsine function 6. arccosine function 7. arctangent function 8. cofunction
Resources	Textbook Kuta Worksheet Builder Examview
Assessment(s)	Mid Chapter Quizzes **Chapter 5 Test** **Chapter 7 Test** A – A – B – B– C – C – D – D – F – F – **Chapter 6 Test** A – D – B – E – C –

Course Name:	Precalculus

Unit Name:	Unit 6: Matrices

Time Frame:	One week
Unit Standards	H.1.a. Use matrices to determine the coordinates of polygons under a given transformation b. Find the reduced row-echelon form of an augmented matrix to solve systems of equations
Unit Essential Questions	How can we multiply matrices to find their determinants and inverses? How do we use matrices to solve systems of linear equations?
Unit Essential Vocabulary	1. identity matrix 　　　　　　　9. 2. inverse matrix 　　　　　　　10. 3. determinant 　　　　　　　　11. 4. Cramer's Rule 　　　　　　　12. 5. 　　　　　　　　　　　　　　13. 6. 　　　　　　　　　　　　　　14. 7. 　　　　　　　　　　　　　　15. 8. 　　　　　　　　　　　　　　16.
Resources	Textbook Kuta Worksheet Builder Examview
Assessment(s)	Mid Chapter Quiz **Chapter Test** A – B – C – D – F –

Course Name: Precalculus	

Unit Name: Unit 7: Conics	

Time Frame:	Two weeks
Unit Standards	D.1.a. Graph ellipses and hyperbolas and their translations from given equations or characteristics b. Solve systems of conics with and without technology c. Convert conic equations in general form to standard form d. Determine characteristics of ellipses and hyperbolas from given equations and graphs e. Identify and write equations for ellipses and hyperbolas from given characteristics and graphs
Unit Essential Questions	How do we analyze, graph, and write equations of parabolas, circles, ellipses, and hyperbolas? How can we use equations to identify types of conic sections? How do we represent rotated conic sections graphically? What two features of a parabola are equidistant from the vertex? What points do you need to write an equation of an ellipse? What kind of figure can be used to locate the vertices and asymptotes of a hyperbola?
Unit Essential Vocabulary	1. conic section 9. Vertex 2. degenerate conic 10. Circle 3. ellipse 11. Center 4. foci 12. Radius 5. hyperbola 13. Major axis 6. transverse axis 14. Minor axis 7. conjugate axis 15. Vertices and Covertices 8. Directrix 16.
Resources	Textbook Kuta Worksheet Builder Examview
Assessment(s)	Mid Chapter Quiz **Chapter Test** A – B – C – D – F –

Course Name: Pre AP Precalculus	
Unit Name: Unit 8: Sequences & Series	
Time Frame:	Two weeks
Unit Standards	12.) Derive the formula for the sum of a finite geometric series (when the common ratio is not 1), and use the formula to solve problems.* *(Extend to infinite geometric series.)* [A-SSE4] (Alabama)
Unit Essential Questions	How can you describe the pattern, write the next term, and write a rule for the nth term of the sequence? How do you determine if a series is finite or infinite? How can you tell that a sequence is arithmetic? How can you find the sum of the terms of a geometric series? When does an infinite geometric series have a sum, and when does it not have a sum?
Unit Essential Vocabulary	1. Sequence 2. Terms of a sequence 3. Series 4. Summation notation 5. Sigma Notation 6. Arithmetic sequence 7. Arithmetic series 8. Common difference 9. Geometric sequence 10. Geometric ratio 11. Geometric series 12. Infinite geometric series
Resources	Textbook Kuta Worksheet Builder Examview
Assessment(s)	Mid Chapter Quiz **Chapter Test** A – B – C – D – F –

Course Name: Pre AP Precalculus

Unit Name: Unit 9: Data Relations, Probability, & Statistics	
Time Frame:	Two weeks
Unit Standards	G.1.a. Use the standard normal curve to study properties of normal distributions of data b. Identify uniform, skewed, and normal distributions in a set of data c. Determine the quartiles and interquartile range for a set of data d. Recognize different types of sampling procedures and identify their strengths and limitations e. Estimate population characteristics based on samples f. Find the variance and standard deviation of a set of data and convert data to standard values
Unit Essential Questions	What variables factor into how many results can occur in any given situation? Is there a way to predict an outcome consistently?
Unit Essential Vocabulary	1. Permutation 2. Combination 3. Outcomes 4. Sample Space 5. Event 6. Independent
Resources	Textbook Kuta Worksheet Builder Examview
Assessment(s)	Mid Chapter Quiz **Chapter Test** A – B – C – D – F –