GRADE LEVEL: HIGH SCHOOL **SUBJECT: PRE-CACLULUS** **DATE: 2021 - 2022**

GRADING PERIOD: QUARTER 1 **MASTER COPY REVISED 5/20/2021**

CONTENT	STANDARD INDICATORS	SKILLS	ASSESSMENT	VOCABULARY	PRIORITY
FUNCTIONS					
• FUNCTIONS • MAXIMUM • MINIMUM • SYMMETRY • END BEHAVIOR	**PC.F.1:** For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity.	• Interpret key features of graphs and tables that model a function. • Sketch graphs of functions given a verbal description. • Identify where a function is increasing, decreasing, positive or negative, relative maximums and minimums, symmetries, and end behavior.	• Teacher Observation • Class Discussion Quiz/Test	• Intercepts • Intervals • Symmetry • Maximum • Minimum End behavior	Critical
• LINEAR MODELS • MEDIAN FIT • REGRESSION • LEAST SQUARES REGRESSION	**PC.F.2:** Find linear models by using median fit and least squares regression methods, making use of technology. Decide which among several linear models gives a better fit. Interpret the slope and intercept in terms of the original context.	• Find linear models by using median fit and least squares regression methods. • Choose the linear model that is the best fit. Interpret the slope and intercept.	• Teacher observation • Class discussion • Quiz/Test	• Median fit regression • Least squares regression	Important
• COMPOSITE FUNCTIONS	**PC.F.3:** Compose functions and find the domain of composite functions.	• Compose functions $f \circ g\ (x)$ and $g\ \circ f\ (x)$. • Find the domain of composite functions.	• Teacher observation • Class discussion • Quiz/Test	• Composite functions	Important

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FUNCTIONS					
• INVERSE FUNCTION	**PC.F.4:** Determine if a graph or table has an inverse, and justify if the inverse is a function, relation, or neither. Identify the values of an inverse function/relation from a graph or a table, given that the function has an inverse. Derive the inverse equation from the values of the inverse.	• Determine if a function has an inverse. • Justify if an inverse is a function, relation, or neither. • Given a function, derive the inverse.	• Teacher observation • Quiz/Test	• Inverse function • Relation	Critical
• INVERTIBLE FUNCTION • NON-INVERTIBLE FUNCTION RESTRICTED DOMAIN	**PC.F.5:** Produce an invertible function from a non-invertible function by restricting the domain.	• Create an invertible function from a non-invertible function by restricting the domain.	• Class discussion • Teacher observation • Quiz/Test	• Invertible • Non-invertible	Important
• EVEN FUNCTIONS ODD FUNCTIONS	**PC.F.6:** Recognize even and odd functions from their graphs and algebraic expressions.	• Identify even and odd functions.	• Class discussion • Quiz/Test	• Even function • Odd function	Important

CONTENT	STANDARD INDICATORS	SKILLS	ASSESSMENT	VOCABULARY	PRIORITY
QUADRATIC, POLYNOMIAL AND RATIONAL EQUATIONS AND FUNCTIONS					
• COMPLETING THE SQUARE QUADRATIC FORMULA	**PC.QPR.1:** Use the method of completing the square to transform any quadratic equation into an equation of the form $(x – p)^2 = q$ that has the same solutions. Derive the quadratic formula from this form.	• Use completing the square to transform any quadratic equation to the form $(x-p)^2=q$. • Derive the quadratic formula.	• Teacher observation • Student presentation • Quiz/Test	• Quadratic Formula	Critical
• CONJUGATES • COMPLEX NUMBERS	**PC.QPR.2:** Understand and use addition, subtraction, multiplication, and conjugation of complex numbers.	• Add, Subtract, multiply complex numbers. • Simplify complex expressions using the conjugates.	• Teacher observation • Class discussion Quiz/Test	• Complex numbers conjugates	Important
• COMPLEX PLANE • DISTANCE • MIDPOINT	**PC.QPR.3:** Calculate the distance between numbers in the complex plane as the modulus of the difference, and the midpoint of a segment as the average of the numbers at its endpoints.	• Calculate the distance between complex numbers. • Determine the midpoint of complex numbers as average of endpoints.	• Teacher Observation • Class discussion • Quiz/Test	• Complex plane • Distance • Midpoint • Modulus	Important
• REMAINDER THEOREM • FACTOR THEROEM	**PC.QPR.4:** Know and apply the Remainder Theorem and the Factor Theorem.	• Know and apply the remainder theorem. • Know and apply the factor theorem.	• Teacher observation • Class discussion Quiz/TesT	• Remainder Theorem •Factor Theorem	Important

CONTENT	STANDARD INDICATORS	SKILLS	ASSESSMENT	VOCABULARY	PRIORITY
QUADRATIC, POLYNOMIAL AND RATIONAL EQUATIONS AND FUNCTIONS					
• FUNDAMENTAL THEOREM OF ALGEBRA	**PC.QPR.5:** Understand the Fundamental Theorem of Algebra. Find a polynomial function of lowest degree with real coefficients when given its roots.	• Apply and understand the Fundamental Theorem of Algebra. • Determine polynomial functions of lowest degree with real coefficients when given its roots.	• Teacher observation • Class discussion • Quiz/Test	• Fundamental Theorem of Algebra	Critical
• RATIONAL FUNCTIONS	**PC.QPR.6:** Graph rational functions with and without technology. Identify and describe features such as intercepts, domain and range, and asymptotic and end behavior.	• Graph rational functions with and without technology. • Identify and describe intercepts, domain and range, and asymptotic end behavior.	• Class discussion • Quiz/Test	• Rational functions • Intercepts • Domain • Range • Asymptotic behavior • End behavior	Critical

GRADE LEVEL: HIGH SCHOOL **SUBJECT: PRE-CACLULUS** **DATE: 2021 - 2022**

GRADING PERIOD: QUARTER 2 **MASTER COPY REVISED 5-20-2021**

CONTENT	STANDARD INDICATORS	SKILLS	ASSESSMENT	VOCABULARY	PRIORITY
EXPONENTIAL AND LOGARITHMIC FUNCTIONS					
• LOGARITHMS	**PC.EL.1:** Use the definition of logarithms to convert logarithms from one base to another and prove simple laws of logarithms.	• Convert logarithms from one base to another. • Prove simple laws of logarithms.	• Class discussion • Quiz/Test	• Logarithms	Critical
• LAWS OF LOGARITHMS	**PC.EL.2:** Use the laws of logarithms to simplify logarithmic expressions, approximate the value of a logarithmic expression, and solve logarithmic equations.	• Simplify logarithmic expressions using laws of logarithms. • Find approximate values of logarithmic expressions. • Solve logarithm equations.	• Teacher observation • Quiz/Test	• Laws of Logarithms	Critical
• EXPONENTIAL FUNCTIONS	**PC.EL.3:** Graph and solve real-world and other mathematical problems that can be modeled using exponential and logarithmic functions; interpret the solution and determine whether it is reasonable. Identify and describe features such as intercepts, domain, range, asymptotes, and end behavior.	• Graph and solve real-world problems that model exponential and logarithmic equations. • Interpret solutions and determine if the solution is reasonable. • Identify intercepts, domain, range, asymptotes, and end behavior.	• Class discussion • Quiz/Test	• Exponential functions	Important
• QUADRATIC, EXPONENTIAL, LOGARITHMIC, AND POWER REGRESSIONS	**PC.EL.4:** Use technology to find a quadratic, exponential, logarithmic, or power function that models a relationship for a bivariate data set to make predictions.	• Use technology to find a quadratic, exponential, logarithmic, and power function regression equations that models a bivariate data set. • Make predictions using regression equations.	• Teacher observations • Quiz/Test	• Bivariate data • Regressions equations	Important

CONTENT	STANDARD INDICATORS	SKILLS	ASSESSMENT	VOCABULARY	PRIORITY
SEQUENCES AND SERIES					
• RECURSIVE FORMULA	**PC.SS.1:** Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers.	• Recognize and define recursive sequences as a function.	• Class discussion • Quiz/Test	• Recursive formula	Critical
• ARITHMETIC SEQUENCE • GEOMETRIC SEQUENCE • EXPLICIT FORMULAS	**PC.SS.2:** Write arithmetic and geometric sequences both recursively and with an explicit formula; use them to model situations and translate between the two forms.	• Represent arithmetic sequences with both explicit and recursive formulas. • Represent geometric sequences with both explicit and recursive formulas.	• Class discussion • Quiz/Test	• Arithmetic Sequence • Geometric Sequence • Explicit formula	Critical
• PARTAL SUMS • SIGMA NOTATION	**PC.SS.3:** Find partial sums of arithmetic and geometric series and represent them using sigma notation.	• Find partial sums of arithmetic and geometric sequences. • Understand and use sigma notation.	• Class discussion • Quiz/Test	• Partial sums • Sigma notation	Critical
	PC.SS.4: Model and solve real-world problems involving applications of sequences and series, interpret the solutions and determine whether the solutions are reasonable.	• Solve real-world problems involving sequences and series. • Determine if solutions to such problems are reasonable.	• Class discussion • Quiz/Test		Important

CONTENT	STANDARD INDICATORS	SKILLS	ASSESSMENT	VOCABULARY	PRIORITY
CONICS					
• FOCUS • DIRECTRIX	**PC.CO.1:** Construct the equation of a parabola given a focus and directrix.	• Use the focus and directrix to derive the equation of a parabola.	• Class discussion • Test/Quiz	• Focus • Directrix	Critical
• CIRCLE	**PC.CO.2:** Construct the equation of a circle of given center and radius. Complete the square to find the center and radius of a circle given by an equation.	• Write the equations of a circle given the center and radius. • Complete the square to find the center and radius of a circle.	• Test/Quiz	• Pythagorean Theorem • Center • Radius	Important
• ELLIPSE • HYPERBOLA	**PC.CO.3:** Construct the equations of ellipses and hyperbolas given at least 2 of the following: foci, vertices, length of an axis, or point on the curve.	• Write an equation of an ellipse given different characteristics of the ellipse including foci, vertices, length of an axis, or point on the curve. • Write an equation of a hyperbola given different characteristics of the hyperbola including foci, vertices, length of an axis, or point on the curve.	• Teacher observation • Test/Quiz	• Ellipse • Hyperbola • Foci • Vertices	Important
• CONIC SECTIONS	**PC.CO.4:** Graph conic sections. Identify and describe features like center, vertex or vertices, focus or foci, directrix, axis of symmetry, major axis, minor axis, and eccentricity.	• Graph parabolas, circles, ellipses and hyperbolas. • Identify center, vertices, foci, directrix, axis of symmetry, major axis, minor axis, and eccentricity of conic sections.	• Student presentation	• Axis of symmetry • Major axis • Minor axis • Eccentricity • Center	Critical