Mt. Zion High School Curriculum Map

Name:_____Department:_____Math_____Subject:_____Algebra 3_____

Quarter	Essential Skills	Strategies and Activities	CC Standards	Assessments
1	Unit 1 Compute slope for a line Write and graph the slope-intercept equation of a line Find slopes and equations of parallel and perpendicular lines Model data with linear equations Find the domain and range of a relation Determine whether a relation is a function Determine whether an equation represents a function Find the domain of a function Evaluate a function Use intercepts to graph a linear equation Modeling data with linear equations Find a function's average rate of change Graph piece-wise and absolute value functions Evaluate piecewise functions Combine functions using the algebra of functions Form composite functions Write functions as compositions Determine domains for composite functions Construct and analyze scatter plots Write a regression equation and draw line of best fit	note-taking desmos activities deltamath practice in class practice worksheet practice	HSA.BF.A.1; HSA.CED.A.1; HSA.REI.B.3; HSA.REI.D.10; HSF.IF.A.1; HSF.IF.B.6; HSF.IF.C.7; HSA.CED.A.4; HSF.LE.A.2; HSF.IF.C.7.B	Unit 1 Quiz/Test
	Unit 2 Decide whether an ordered pair is a solution of a linear system.		HSA.REI.C.5; HSA.REI.C.6; HSA.REI.C.7; HSA.REI.D.11;	Unit 2 Quiz/Test

	Solve linear systems by substitution. Solve linear systems by addition. Identify systems that do not have exactly one ordered-pair solution. Solve problems using systems of linear equations. Verify the solution of a system of linear equations in three variables. Solve systems of linear equations in three variables. Solve problems using systems in three variables. Graph a linear inequality in two variables. Graph a nonlinear inequality in two variables. Use mathematical models involving linear inequalities. Graph a system of inequalities. Analyze relationships and systems to find extreme values Solve problems with systems using linear programming Perform operations with matrices Multiply matrices. Solve matrix equations. Evaluate determinants. Find inverses of matrices. Represent systems using matrices. Understand row and column operations Solve systems using matrices with and without technology		HSA.REI.D.10; HSA.REI.D.12	

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2	Unit 3 Find intercepts, domain and range of a function. Determine intervals on which functions are increasing, decreasing, or constant. Identify even and odd functions. Graph 14 basic parent functions Analyze properties and key-features of the parent functions Graph transformations of linear, quadratic and absolute value function families Use rigid transformation properties for graphing functions Use non-rigid transformation properties for graphing functions Analyze transformations and write equations in standard form given transformations Determine continuity of functions. Find domain and range of a function analytically Compare functions using multiple representations Perform operations on functions using tables, graphs and equations. Find inverse functions informally and algebraically. Verify two functions are inverses of each other Use graphs of functions to determine whether functions have inverse functions		HSF.IF.B.4 ; HSF.IF.C.7.A; HSF.IF.C.7.B; HSF.IF.C.7.C; HSF.IF.C.7.D; HSF.IF.C.7.E; HSF.BF.A.1.C; HSF.IF.B.4; HSF.IF.B.5; HSF.BF.B.4.A; HSF.BF.B.4.B; HSF.BF.B.4.C; HSF.BF.B.4.D; MP4; MP5; MP6	Unit 3 Quiz/Test

	Use the Horizontal Line Test to determine if functions are one-to-one Write a function from known formulas Solve “real-world” problems from verbal descriptions Use data to write functions and solve problems Find regression equations from data Unit 4 Solve equations involving fractions Identify extraneous solutions Solve a polynomial inequality graphically Find where polynomials are zero and the intervals where the polynomial is positive or negative by using a sign chart. Model and predict real-world scenarios with given parameter values Graph quadratic functions in vertex form Describe characteristics of quadratic functions Use the discriminant to evaluate roots of a function Solve quadratic equations by a variety of methods Write and analyze an algebraic model given real- world scenarios Use the Leading Coefficient Test Describe characteristics of a polynomial from the equation Find zeros, multiplicity of zeros, extrema, and end- behavior		HSF.IF.B.4; HSF.IF.B.6; HSF.IF.C.7; HSF.IF.C.7.A; HSF.IF.C.7.C; HSF.IF.C.8.A; HSN.APR.B.2; HSN.APR.B.3; HSF.IF.CN.C.7; HSN.CN.C.8; HSN.CN.C.9	Unit 4 Quiz/Test Semester 1 Exam

	Write polynomial equation given zeros Use the Remainder and Factor Theorems Divide polynomials using long division and synthetic division. Find both real zeros and rational zeros of polynomials Write polynomial functions given degree and zeros Explain the connections of characteristics such as roots, zeros, factors, and x-intercepts Use the Fundamental Theorem of Algebra to factor polynomials Write polynomials in standard form given zeros, degree, multiplicity, and factors Find all zeros both real and complex using the Fundamental Theorem of Algebra Write a linear factorization of polynomials given equations, zeros, and other key characteristics			

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3	Unit 5 Standard position of angles Understand properties of positive and negative angles Find measures of coterminal angles Find reference angles Convert between degrees and radians		HSF.TF.A.1; HSF.TF.A.2; HSF.TF.A.3; HSF.TF.A.4; HSF.TF.B.5; HSF.LE.A.1.C; HSF.LE.A.2;	Unit 5 Quiz/test

	Find measures of an intercepted arc Solve real-world applications Defining trigonometric functions Using reciprocal identities Use Pythagorean Theorem to find trig values Make a connection between the 30-60-90 and 45-45-90 triangles and a unit circle and ratios (SOH-CAH-TOA) Use properties of right triangles to find all six trigonometric ratios Define trigonometric functions using right triangles Find exact values using the unit circle Relate inverse properties to trigonometric functions Evaluate inverse trigonometric functions Use inverse properties to solve trigonometric equations Use technology to evaluate solutions to trigonometric equations Use computational applications of the Law of Sines Solve real-world applications using Law of Sines Find area of a triangle given two sides and an angle Use computational applications of the Law of Cosines Use Law of Cosines to solve application problems Find area of a triangle using Heron's formula in terms of the sides.		HSF.TF.B.6; HSA.SSE.A.2; HSA.SSE.B.3	

	Unit 6 Investigate the basic behaviors of exponential and logarithmic functions and their graphs Analyze and evaluate logarithmic functions Analyze exponential and logarithmic graphs for domain, range, end-behavior, continuity, symmetry, asymptotes, increase and decrease. Graph common and natural logarithmic functions Use properties of exponents and logarithms to simplify and evaluate expressions Apply the properties of logarithms to solve exponential and logarithmic equations algebraically Convert equations between logarithmic form and exponential form Evaluate common and natural logarithms Solve inequalities involving exponential and logarithmic expressions Solve exponential and logarithmic equations related to real-world scenarios Use exponential growth, decay, and regression to model real-life problems Analyze the function behavior related to population models Solve real-world problems related to compoun continuous interest.		HSF.LE.A.1.C; HSF.LE.A.2; HSA.REI.D.11; HSF.IF.C.7.E; HSF.IF.C.8.A; HSF.LE.A.4; HSF.BF.A.1.B; HSF.BF.A.1.C; HSF.LE.A.1.C; HSF.LE.A.4	Unit 6 Quiz/test

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4	Unit 7 Express arithmetic and geometric sequences explicitly Express arithmetic and geometric sequences recursively Use summation notation to write and find sums of series. Recognize, write and find nth terms of arithmetic sequences Find nth partial sums of arithmetic sequences Use arithmetic sequences to model real-world applications Recognize, write and find nth terms of geometric sequences Find nth partial sums of geometric sequences Determine if geometric series converge or diverge Use geometric sequences and series to model real-world problems Use Pascal's Triangle a binomial expansion pattern N-factorial Binomial coefficients The Binomial Theorem Kth term of a binomial expansion Unit 8 Use permutations and combinations to find probability Describe and analyze permutations		HSF.BF.A.1.A; HSF.BF.A.2 HSS-CP.A.1; HSS.CP.A.2; HSS.CP.A.3;	Unit 7 Quiz/Test Unit 8 Quiz/Test Semester 2 Exam

	Describe and analyze combinations Find experimental probabilities Find theoretical probabilities Determine the probabilities of events A and B for real-world situations Determine the probabilities of events A or B for real-world situations Determine conditional probabilities Interpret data and relationships by using formulas and tree diagrams Find probabilities of compound events Use the complement to find the probability of compound events		HSS.CP.A.4; HSS.CP.A.5; HSS.CP.A.5; HSS.CP.B.6; HSS.CP.B.7; HSS.CP.B.8; HSS.CP.B.9	