Ganado Unified School District (Algebra 2, HS)

PACING Guide SY 2018-2019

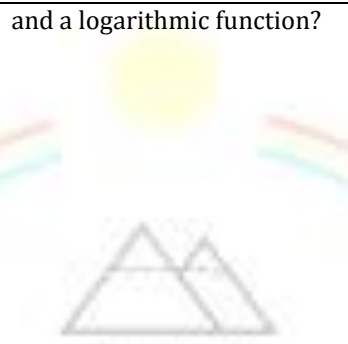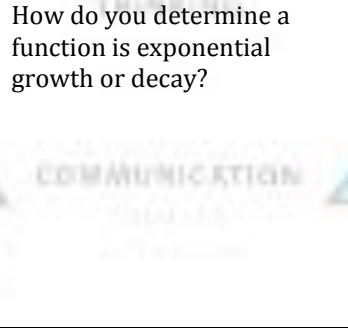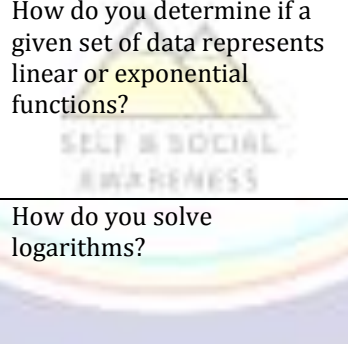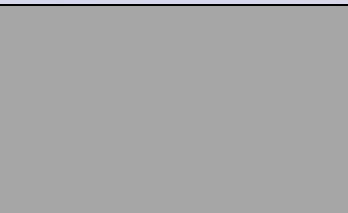| Timeline & Resources	AZ College and Career Readiness Standard	Essential Question (HESS Matrix)	Learning Goal	Vocabulary (Content/Academic)
1st Quarter Unit 1	HS.F.IF.7 Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.*	How do you graph a function written in the following forms (linear)? 1. slope-intercept form 2. point-slope form 3. standard form How would you graph a quadratic function?	I will demonstrate my knowledge of graphing functions expressed symbolically and identify key features of the graph.	Functions Key features
	HS.F.IF.7b Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions.	What is a general shape of the graph of a square root function? What is a general shape of the graph of an absolute value function?	I will demonstrate my knowledge of graphing square root functions by hand or using technology. I will demonstrate my knowledge of graphing cube root functions by hand or using technology. I will demonstrate my knowledge of graphing piecewise functions (including step functions and absolute value functions) by hand or using technology.	Square root Cube root Piecewise function Step function Absolute value function
	HS.F.BF.1 Write a function that describes a relationship between two quantities.*	Why is important to write functions that describes a relationship?	I will demonstrate my knowledge of writing a function that describes a relationship between two quantities.	Function
	HS.F.BF.1c (+) Compose functions. For	How would you describe	I will demonstrate my knowledge of	Composition of Functions

	example, if T(y) is the temperature in the atmosphere as a function of height, and h(t) is the height of a weather balloon as a function of time, then T(h(t)) is the temperature at the location of the weather balloon as a function of time.	the steps to compose two functions?	compose functions.	
	HS.F.BF.4 Find inverse functions	How do you find the inverse of a function?	I will demonstrate my knowledge of finding an inverse of a function graphically or algebraically.	Inverse function
	HS.F.BF.4a Solve an equation of the form $f(x) = c$ for a simple function f that has an inverse and write an expression for the inverse. For example, $f(x) = 2(x^3)$ for $x > 0$ or $f(x) = (x+1)/(x-1)$ for $x \neq 1$ (x not equal to 1).			
Reading	Reading CCR 1: Read closely to determine what the text says explicitly and to make logical inferences from it.		Students will be able to read real-world situations and make inferences related to desired results.	
Writing	Writing CCR1: Using valid reasoning to support claims.			
2nd Quarter	**HS.N-CN.1.** Know there is a complex number i such that $i^2 = -1$, and every complex number has the form $a + bi$ with a and b real.	Explain what a complex number is and give an example of a complex number.	I will demonstrate my knowledge of complex numbers.	Complex number
	HS.N-CN.2. Use the relation $i^2 = -1$ and the commutative, associative, and distributive properties to add, subtract, and multiply complex numbers.	Explain how to add, subtract, and multiply complex numbers.	I will demonstrate my knowledge of adding, subtracting, and multiply complex numbers.	Commutative Property Associative Property Distributive Property
	HS.N-CN.7. Solve quadratic equations with real coefficients that have complex solutions.	What other terms that have the same meaning as a "solution"?	I will demonstrate my knowledge of solve quadratic equations that have complex solutions.	Quadratic Equation Complex Solution
	HS.N-CN.8. Extend polynomial identities to the complex numbers. *For example, rewrite $x^2 + 4$ as $(x + 2i)(x - 2i)$.*	How do the polynomial identities extend to the complex numbers.	I will demonstrate my knowledge of extending the polynomial identities to the complex numbers.	Polynomial Polynomial Identities
	HS.N-CN.9. Know the Fundamental Theorem of Algebra; show that it is true for quadratic polynomials.	How would you apply the Fundamental Theorem of Algebra to solve quadratic polynomials?	I will demonstrate my knowledge of the Fundamental Theorem of Algebra.	Fundamental Theorem of Algebra Quadratic Function/Equation
	HS.A-REI.4. Solve quadratic equations in one variable. a. Use the method of completing the	What are methods used to solve a quadratic equation?	I will demonstrate my knowledge of solving quadratic equations by completing the square.	Quadratic Equation Completing the Square Taking Square Root

	square to transform any quadratic equation in x into an equation of the form $(x – p)^2 = q$ that has the same solutions. Derive the quadratic formula from this form. Solve quadratic equations by inspection (e.g., for $x^2 = 49$), taking square roots, completing the square, the quadratic formula and factoring, as appropriate to the initial form of the equation. Recognize when the quadratic formula gives complex solutions and write them as $a \pm bi$ for real numbers a and b.		I will demonstrate my knowledge of solving quadratic equations by taking the square roots. I will demonstrate my knowledge of solving quadratic equations by using the quadratic formula. I will demonstrate my knowledge of solving quadratic equations by factoring.	Quadratic Formula Factoring
	HS.F-IF.7. Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. Graph ~~linear and~~ quadratic functions and show intercepts, maxima, and minima.	What is the shape of the graph of a quadratic function? Identify key features of a parabola.	I will demonstrate my knowledge of graphing polynomials functions by identifying the intercepts and maximum or minimum.	Parabola Line of symmetry Vertex
Reading	**Key Ideas and Details**: 1. Read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text. 2. Determine central ideas or themes of a text and analyze their development; summarize the key supporting details and ideas. **Craft and Structure:** 4. Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone.		Students will be able to annotate and analyze informational text by using the CLOSE reading strategy.	
Writing	Writing CCR1: Using valid reasoning to support claims.			
3rd Quarter	**HS.F-IF.7.** Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using	How do you determine the end behavior of the graph of a polynomial?	I will demonstrate my knowledge of graphing polynomials functions by identifying the zeros and showing the	Zeros End behavior

	technology for more complicated cases. c. Graph polynomial functions, identifying zeros when suitable factorizations are available, and showing end behavior.	How do you use zeros to graph a polynomial?	end behavior.	
	HS.A-SSE.2. Use the structure of an expression to identify ways to rewrite it. *For example,* *see $x^4 - y^4$ as $(x^2)^2 - (y^2)^2$, thus recognizing it as a difference of squares that can be factored as* *$(x^2 - y^2)(x^2 + y^2)$.*	What is the importance of rewriting expressions?	I will demonstrate my knowledge of rewriting an expression using difference of squares, difference of cubes and sum of cubes.	Difference of Cubes Sum of Cubes Difference of Squares Factoring
	HS.A-APR.1. Understand that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication; add, subtract, and multiply polynomials.	How do you add, subtract, and multiply polynomials?	I will demonstrate my knowledge of operations of polynomials by adding, subtracting, and multiplying polynomials.	Combine like terms FOIL Box Method
	HS.A-APR.3. Identify zeros of polynomials when suitable factorizations are available, and use the zeros to construct a rough graph of the function defined by the polynomial.	How do you use zeros to construct a rough graph of a polynomial? How do you find zeros of a polynomial?	I will demonstrate my knowledge of identifying zeros to construct a rough graph of a function.	Zeros of a polynomial
Reading	**Key Ideas and Details**: 1. Read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text. 2. Determine central ideas or themes of a text and analyze their development; summarize the key supporting details and ideas. **Craft and Structure:** 4. Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word		Students will be able to annotate and analyze informational text by using the CLOSE reading strategy.	

	choices shape meaning or tone.			
Writing	Writing CCR1: Using valid reasoning to support claims.			
4th Quarter	**HS.N-RN.A.1.** Explain how the definition of the meaning of rational exponents follows from extending the properties of integer exponents to those values, allowing for a notation for radicals in terms of rational exponents. *For example, we define $5^{1/3}$ to be the cube root of 5 because we want $(5^{1/3})^3 = 5^{(1/3)3}$ to hold, so $(5^{1/3})^3$ must equal 5.*	Explain the definition of the meaning of rational exponent.	I will demonstrate my knowledge of rational exponents by rewriting radical expression into exponential notation.	Rational exponent Properties of Exponents Radical
	HS.N-RN.A.2. Rewrite expressions involving radicals and rational exponents using the properties of exponents.	How do you rewrite a radical expression using rational exponents?	I will demonstrate my knowledge of radicals and rational notation by applying the properties of exponents.	Radical expression Rational Exponent
	HS.A-SSE.B.3. Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression. c. Use the properties of exponents to transform expressions for **exponential functions**. *For example the expression 1.15^t can be rewritten as $(1.15^{1/12})^{12t} \approx 1.012^{12t}$ to reveal the approximate equivalent monthly interest rate if the annual rate is 15%.*		I will demonstrate my knowledge of properties of exponents by transforming expression for exponential functions.	
	HS.A-CED.A.1. Create equations and inequalities in one variable and use them to solve problems. *Include equations arising from linear and quadratic functions, and **simple rational and exponential functions.***	How do you determine if a function is exponential?	I will be able to create simple rational and exponential functions.	Rational function Exponential Function
	HS.A-REI.A.2. Solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise.	How do you know if a solution is extraneous?	I will be able to solve simple rational and exponential functions in one variable.	Extraneous solution
	HS.F-IF.C.7. Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. a. Graph square root, cube root, and piecewise-defined functions,	How do you determine the end behavior of the graph of a rational function? How do you determine the intercepts of an exponential	I will be able to graph square root functions. I will be able to graph rational functions.	Intercepts End Behavior

		including step functions and absolute value functions. d. Graph rational functions, identifying zeros and asymptotes when suitable factorizations are available, and showing end behavior. Graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric functions, showing period, midline, and amplitude.	and a logarithmic function?	I will be able to graph exponential functions. I will be able to graph logarithmic functions, showing their intercepts, and end behavior.	
		HS.F-IF.C.8. Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function. Use the properties of exponents to interpret expressions for exponential functions. *For example, identify <u>percent rate of change</u> in functions such as $y = (1.02)^t$, $y = (0.97)^t$, $y = (1.01)^{12t}$, $y = (1.2)^{t/10}$, and classify them as representing exponential growth or decay.*	How do you determine a function is exponential growth or decay?	I will be able to rewrite expressions using equivalent forms and classify them as exponential decay or exponential growth.	Exponential growth Exponential decay
		HS.F-LE.A.1. Distinguish between situations that can be modeled with linear functions and with exponential functions. Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another.	How do you determine if a given set of data represents linear or exponential functions?	I will be able to modeled situations as an exponential decay or exponential growth function.	
		HS.F-LE.A.4. For exponential models, express as a logarithm the solution to $ab^{ct} = d$ where a, c, and d are numbers and the base b is 2, 10, or e; evaluate the logarithm using technology.	How do you solve logarithms?	I will be able to solve logarithmic functions.	Logarithm
Reading		**Key Ideas and Details**: 1. Read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text. 2. Determine central ideas or themes of a		Students will be able to annotate and analyze informational text by using the CLOSE reading strategy.	

	text and analyze their development; summarize the key supporting details and ideas. **Craft and Structure:** 4. Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone.			
Writing	Writing CCR1: Using valid reasoning to support claims.			