Decatur City Schools
Grades 9-12 Math PLC

2020-2021 Mathematics Pacing Guide

Advanced Pre-Calculus

1st Nine Weeks

Day	Standard	SFOs I can…	ACT Alignment	Suggested Activities
1 Functions (12 days)	24. Compare and contrast families of functions and their representations (algebraically, graphically, numerically, and verbally in terms of their key features. *Note: Key features include intercepts; intervals where the function is increasing, decreasing, positive, or negative; maximums and minimums; symmetries (including even and odd); end behavior; asymptotes; and periodicity.* **Families of functions include but are not limited to linear, quadratic, polynomial, exponential, logarithmic, absolute value, radical, rational, piecewise, trigonometric, and their inverses.**	I can find domain, range, x&y intercepts, intervals of increasing/decreasing/positive/negative/constant, maximums, minimums, symmetry(even, odd, neither), end behavior and asymptotes of various functions.	Solve linear, quadratic, rational and radical equations. Graph linear, quadratic, polynomial, exponential, logarithmic, sine and cosine functions. Factor Polynomials using a variety of methods. Use inductive reasoning to make conjectures and deductive reasoning to arrive at valid conclusions. Identify and graph piecewise functions Graph general polynomial functions from given characteristics such as degree, sign of lead coefficient, and roots and their multiplicity	ATA domain/range cut and paste. A+ Applications of Piecewise Functions (2 different activities) A+ Characteristics of Discontinuous Functions A+ Analysis of Functions Good visual for increasing/decreasing: https://www.coolmath.com/algebra/22-graphing-polynomials/09-increasing-decreasing-01

	25. Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval. Estimate the rate of change from a graph. **Extend from polynomial, exponential, logarithmic, and radical to rational and all trigonometric functions.** a. Find the difference quotient $\frac{f(x+\Delta x)-f(x)}{\Delta x}$ of a function and use it to evaluate the average rate of change at a point.	I can calculate and interpret the average rate of change over a given interval. I can use the difference quotient.		
	30. Identify the effect on the graph of replacing $f(x)$ by $f(x)+k, k \cdot f(x)$, $f(k \cdot x)$, and $f(x+k)$ for specific values of k (both positive and negative); find the value of k given the graphs. **Extend the analysis to include all trigonometric, rational, and general piecewise-defined functions with and without technology.** *Example: Describe the sequence of transformations that will relate* y=sin(x) and y=2sin(3x).	I can identify the transformations given a graph or an equation.	Identify, graph and write equations for inverses and transformations of various functions, including polynomial, rational, radical, absolute value, and trigonometric - with and without technology.	A+ Frantic Functions
	26. Graph functions expressed symbolically and show key features of the graph, by hand and using technology. Use the equation of functions to identify key features in order to generate a graph.	I can graph basic parent functions using transformations. I can identify key characteristics of the functions (see standard 24 for key characteristics). I can graph piecewise functions. Consider teaching applications of piecewise functions.	Identify, graph and write equations for inverses and transformations of various functions, including polynomial, rational, radical, absolute value, and trigonometric - with and without technology. Graph general polynomial functions from given characteristics such as degree, sign of lead coefficient, and roots and their	

			multiplicity	
	27. Compose functions. **Extend to polynomial, trigonometric, radical, and rational 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.*	I can compose functions. Consider reviewing function operations as well.		
	28. Find inverse functions. a. Given that a function has an inverse, write an expression for the inverse of the function. *Example: Given* $f(x) = 2x^3$ or $f(x) = (x + 1)/(x - 1)$ *for* $x \neq 1$ *find* $f^{-1}(x)$. b. Verify by composition that one function is the inverse of another. c. Read values of an inverse function from a graph or a table, given that the function has an inverse.	I can find the inverse of a function. I can verify that two equations are inverses using compositions (f(g(x)) = g(f(x)) = x). I can read values of an inverse given a graph or a table.	**Identify, graph and write equations for inverses and transformations of various functions, including polynomial, rational, radical, absolute value, and trigonometric - with and without technology**	Supplemental activities needed for inverses given a table or a graph. ATA inverse/operations carousel.
Rationals and Radicals (Algebra) 11 days	19. Add, subtract, multiply, and divide rational expressions. a. Explain why rational expressions form a system analogous to the rational numbers, which is closed under addition, subtraction, multiplication, and division by a nonzero rational expression.	I can add, subtract, multiply and divide rational expressions. I can simplify complex fractions. I can find the domain of a rational expression.	A 513. Determine when an expression is undefined	
Rationals and Radicals (Graphing) 5 days	20. Explain each step in solving an equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a clear-cut solution. Construct a viable argument to justify a solution method. **Include equations that may involve linear, quadratic, polynomial,**	I can justify each step in solving a rational equation.	A 513. Determine when an expression is undefined	

	exponential, logarithmic, absolute value, radical, rational, piecewise, trigonometric functions, and their inverses. 21. Solve simple rational equations in one variable, and give examples showing how extraneous solutions may arise.	I can solve rational equations. I can determine if a solution is extraneous by looking at the domain of the equation.		
Trig (4 days)	33. Use special triangles to determine geometrically the values of sine, cosine, and tangent for π/3, π/4, and π/6, and use the unit circle to express the values of sine, cosine, and tangent for π – x, π + x, and 2π – x in terms of their values for *x*, where *x* is any real number.	Consider reviewing basic Soh Cah Toa, law of sines/cosines and special right triangle problems. I can draw angles in standard form. I can convert angles between degrees and radian measure. I can use special right triangles to find the trig ratios of π/3, π/4, and π/6. I can use the unit circle to find the exact trig value of any special angle.		Paper Plate Unit Circle as a visual. Quizizz unit circle values for practice. ATA unit circle mazes.

2nd Nine Weeks

Day	Standard	SFOs	ACT Alignment	Suggested Activities

Trig (15 days)	34. Use the unit circle to explain symmetry (odd and even) and periodicity of trigonometric functions.	I can use the unit circle to show symmetry and periodicity of trig functions.		
	24. Compare and contrast families of functions and their representations (algebraically, graphically, numerically, and verbally in terms of their key features. *Note: Key features include intercepts; intervals where the function is increasing, decreasing, positive, or negative; maximums and minimums; symmetries (including even and odd); end behavior; asymptotes; and periodicity.* **Families of functions include but are not limited to linear, quadratic, polynomial, exponential, logarithmic, absolute value, radical, rational, piecewise, trigonometric, and their inverses.**	I can graph all six trig functions using amplitude, period, midline, transformations and asymptotes.	Graph and write the equations of sine and cosine functions given the amplitude, period, phase shift, and vertical translation	
	b. Graph trigonometric functions and their inverses, showing period, midline, amplitude, and phase shift.	I can graph all six trig functions using amplitude, period, midline, transformations and asymptotes.	Graph sine, cosine, tangent, cotangent, secant and cosecant and their transformations. Identify and graph inverse sine, cosine and tangent functions.	Supplement with A+ Window Pane technique questions on writing the trig function given the graph. Supplement with application problems modeled by trig graphs.
	30. Identify the effect on the graph of replacing $f(x)$ by $f(x)+k, k\cdot f(x)$, $f(k\cdot x)$, and $f(x+k)$ for specific values of k (both positive and negative); find the value of k given the graphs. **Extend the analysis to include all trigonometric, rational, and general piecewise-defined functions with and without technology.** *Example: Describe the sequence of transformations*	I can graph all six trig functions using amplitude, period, transformations and asymptotes.	Graph transformations of sine and cosine functions. Determine periodicity and amplitude from graphs, stretch and shrink graphs both vertically and horizontally, and	Applications of periodic functions: https://prezi.com/ohccxv0iek9t/real-world-examples-of-periodic-functions/

	that will relate y=sin(x) and y=2sin(3x).		translate graphs	
Trig (10 days)	28. Find inverse functions.	I can find the inverse of a trig function.		ATA trig inverse/composition expressions mazes.
	35. Demonstrate that restricting a trigonometric function to a domain on which it is always increasing or always decreasing allows its inverse to be constructed.	I can restrict the domain of a trig function in order to find its inverse.		
	36. Use inverse functions to solve trigonometric equations that arise in modeling contexts; evaluate the solutions using technology, and interpret them in terms of the context.	I can use inverse trig functions to solve trig equations.	Graph and write the equations of sine and cosine functions given the amplitude, period, phase shift, and vertical translation; use the function to model real-life situations (elg. Spring problems, ocean tides) Use and evaluate inverse sine, cosine and tangent functions to solve trigonometric equations.	ATA solve trig equations mazes and task card activity.
	27. Compose functions. **Extend to polynomial, trigonometric, radical, and rational 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.*	I can compose trig functions.		ATA trig inverse/composition expressions mazes.
	37. Use trigonometric identities to solve problems.	I can use $\sin^2(\theta) + \cos^2(\theta) = 1$ to	Use trigonometric identities or technology	ATA trig identity mazes

	a. Use the Pythagorean identity $\sin^2(\theta) + \cos^2(\theta) = 1$ to derive the other forms of the identity. *Example*: $1 + \cot^2(\theta) = \csc^2(\theta)$ b. Derive and use the double angle formulas for sine, cosine, and tangent. c. Use the angle sum formulas for sine, cosine, and tangent to derive the double angle formulas. d. Use the Pythagorean and double angle identities to prove other simple identities.	prove $1 + \cot^2(\theta) = \csc^2(\theta)$ and $\tan^2(\theta) + 1 = \sec^2(\theta)$. I can derive and use the double angle formulas. I can use the sum/difference angle formulas to find exact trig values. I can use the Pythagorean and double angle identities to prove other identities.	to solve trigonometric equations. Identify the sum and difference identities for the sine, cosine and tangent functions; apply the identities to solve mathematical problems.	and relay. ATA sum/difference/double angle mazes.
	20. Explain each step in solving an equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a clear-cut solution. Construct a viable argument to justify a solution method. **Include equations that may involve linear, quadratic, polynomial, exponential, logarithmic, absolute value, radical, rational, piecewise, trigonometric functions, and their inverses.**	I can solve trig equations.	Use trigonometric identities or technology to solve trigonometric equations.	ATA solve trig equations mazes and task card activity
Polynomials (4 days)	17. Know and apply the Binomial Theorem for the expansion of $(x + y)^n$ in powers of x and y for a positive integer, n, where x and y are any numbers.	I can expand powers of a binomial using Pascal's triangle.	Describe the binomial theorem and Pascal's triangle; use them to expand polynomials.	
	18. Rewrite simple rational expressions in different forms; write $a(x)/b(x)$ in the form $q(x) + r(x)/b(x)$, where $a(x)$, $b(x)$, $q(x)$, and $r(x)$ are polynomials with the degree of $r(x)$ less than the degree of $b(x)$, using inspection, long division, or, for the more	I can divide polynomials using long division and synthetic division.		

	complicated cases, a computer algebra system.			

3rd Nine Weeks

Day	Standard	SFOs	ACT Alignment	Suggested Activities
Polynomial Functions (7 days)	6. Analyze possible zeros for a polynomial function over the complex numbers by applying the Fundamental Theorem of Algebra, using a graph of the function, or factoring with algebraic identities.	I can determine the number of zeros of a polynomial using the Fundamental Theorem of Algebra. I can find real and complex zeros of polynomials by factoring, using p/q (rational root theorem) or graphing.	N 504. Exhibit some knowledge of the complex numbers A 702. Match simple quadratic inequalities with their graphs on the number line	ATA Polynomial Equation Math Lib Activity
	16. Derive and apply the Remainder Theorem: For a polynomial p(x) and a number a, the remainder on division by $x – a$ is $p(a)$, so $p(a) = 0$ if and only if $(x – a)$ is a factor of $p(x)$.	I can use the Remainder Theorem to determine if a given expression is a factor of a polynomial.	A 703. Apply the remainder theorem for polynomials, that $P(a)$ is the remainder when $P(x)$ is divided by $(x – a)$	
	20. Explain each step in solving an equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a clear-cut solution. Construct a viable argument to justify a solution method. **Include equations that may involve linear, quadratic, polynomial, exponential, logarithmic, absolute value, radical, rational, piecewise, trigonometric functions, and their inverses.**	I can justify each step in solving polynomial equations.		
	24. Compare and contrast families of functions	I can find domain, range,		

	and their representations (algebraically, graphically, numerically, and verbally in terms of their key features. *Note: Key features include intercepts; intervals where the function is increasing, decreasing, positive, or negative; maximums and minimums; symmetries (including even and odd); end behavior; asymptotes; and periodicity.* **Families of functions include but are not limited to linear, quadratic, polynomial, exponential, logarithmic, absolute value, radical, rational, piecewise, trigonometric, and their inverses.**	x&y intercepts, intervals of increasing/decreasing/positive/negative/constant, maximums, minimums, symmetry(even, odd, neither), and end behavior of polynomial functions.		
	26. Graph functions expressed symbolically and show key features of the graph, by hand and using technology. Use the equation of functions to identify key features in order to generate a graph.	I can graph polynomials by hand using zeros, intercepts, tables, end behavior, etc. I can graph polynomials using a graphing calculator by using the zero, max/min, table, etc keys.		Applications of polynomials: https://prezi.com/mgex5cker4er/real-life-application-of-polynomial/
Rational Functions (4 days)	24. Compare and contrast families of functions and their representations (algebraically, graphically, numerically, and verbally in terms of their key features. *Note: Key features include intercepts; intervals where the function is increasing, decreasing, positive, or negative; maximums and minimums; symmetries (including even and odd); end behavior; asymptotes; and periodicity.* **Families of functions include but are not limited**	I can graph a rational function using zeros, removable discontinuities, x&y intercepts, vertical/horizontal/slant asymptote and end behavior.	F 508. Find the domain of polynomial functions and rational functions F 510. Find where a rational function's graph has a vertical asymptote	ATA Transformations of Functions and Rational Function Mystery Code Activities.

	to linear, quadratic, polynomial, exponential, logarithmic, absolute value, radical, rational, piecewise, trigonometric, and their inverses.			
	26. Graph functions expressed symbolically and show key features of the graph, by hand and using technology. Use the equation of functions to identify key features in order to generate a graph. a. Graph rational functions, identifying zeros and asymptotes when suitable factorizations are available, and showing end behavior.	I can graph a rational function using zeros, removable discontinuities, x&y intercepts, vertical/horizontal/slant asymptote and end behavior.	F 508. Find the domain of polynomial functions and rational functions F 510. Find where a rational function's graph has a vertical asymptote	A+ Graphic Organizer RATEY helps to learn all parts of graphing rationals. A+ activity on graphing points of removable discontinuities is an excellent introduction.
Limits (4 days)	7. Determine numerically, algebraically, and graphically the limits of functions at specific values and at infinity.	I can find the limit of a function given a graph - from left, from right, at a specific value, or to + or - infinity. I can find the limit of a function at a specific value algebraically by direct substitution, factoring and using conjugates. I can find the limit to + or - infinity of a well-behaved polynomial using end behavior. I can find the limit to + or - infinity of a rational using end behavior (asymptote rules). I can find the limit of a function numerically by using a table.		ATA Limits Triples activity A+ limits by graphing is better than the ATA notes. A+ has a good algebraic review of limits. A+ has a better limits using a table lesson than ATA.

	25b. Explore how the average rate of change of a function over an interval (presented symbolically or as a table) can be used to approximate the instantaneous rate of change at a point as the interval decreases.	I can calculate the derivative using the definition of derivative.		Supplement with a KUTA worksheet.
Exponentials and Logarithms (9 days)	1. Define the constant e in a variety of contexts. *Example: the total interest earned if a 100% annual rate is continuously compounded.*	I can define "e" and use it in various applications.		
	24. Compare and contrast families of functions and their representations (algebraically, graphically, numerically, and verbally in terms of their key features. *Note: Key features include intercepts; intervals where the function is increasing, decreasing, positive, or negative; maximums and minimums; symmetries (including even and odd); end behavior; asymptotes; and periodicity.* **Families of functions include but are not limited to linear, quadratic, polynomial, exponential, logarithmic, absolute value, radical, rational, piecewise, trigonometric, and their inverses.**	I can graph exponential and logarithmic functions using key characteristics - zeros, domain, range, asymptotes.		
	30. Identify the effect on the graph of replacing $f(x)$ by $f(x)+k, k\cdot f(x)$, $f(k\cdot x)$, and $f(x+k)$ for specific values of k (both positive and negative); find the value of k given the graphs. **Extend the analysis to include all trigonometric, rational, and general piecewise-defined functions with and without technology.** *Example: Describe the sequence of*	I can graph exponential and logarithmic functions using key characteristics - zeros, domain, range, asymptotes - and transformations.		

	transformations that will relate y=sin(x) and y=2sin(3x).			
	20. Explain each step in solving an equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a clear-cut solution. Construct a viable argument to justify a solution method. **Include equations that may involve linear, quadratic, polynomial, exponential, logarithmic, absolute value, radical, rational, piecewise, trigonometric functions, and their inverses.**	I can verify each step in solving an exponential or logarithmic equation.	Solve equations involving real exponents. Solve equations with variable exponents by using logarithms. Use the natural base e to evaluate exponential expressions, solve exponential equations, and graph exponential functions. Solve exponential and logarithmic equations and real-world problems involving exponential and logarithmic equations (e.g. compound interest, exponential growth and decay)	
	29. Use the inverse relationship between exponents and logarithms to solve problems involving logarithms and exponents. **Extend from logarithms with base 2 and 10 to a base of *e*.**	I can solve exponential equations using equal bases and logarithms. I can solve logarithmic equations (log = # and log = log) using properties of logs and exponential form. I can solve application problems with exponentials and logarithms.		

4th Nine Weeks

Day	Standard	SFOs	ACT Alignment	Suggested Activities
Conics (5 days)	**31. Graph conic sections from second-degree equations, extending from circles and parabolas to ellipses and hyperbolas, using technology to discover patterns.** **a. Graph conic sections given their standard form.** **Example: The graph of $\frac{x^2}{9}+\frac{(y-3)^2}{4}=1$ will be an ellipse centered at (0,3) with major axis 3 and minor axis 2, while the graph of $\frac{x^2}{9}-\frac{(y-3)^2}{4}=1$ will be a hyperbola centered at (0,3) with asymptotes with slope ±3/2.** **b. Identify the conic section that will be formed, given its equation in general form. Example: $5y^2-25x^2=-25$ will be a hyperbola.**	I can graph a circle, parabola, ellipse and hyperbola in standard form. I can complete the square to convert a conic's equation to standard form. I can identify the conic that will be formed given an equation in general form.	Graph ellipses and hyperbolas and their translations from given equations or characteristics. Determine characteristics of ellipses and hyperbolas from given equations and graphs. Identify and write equations for ellipses and hyperbolas from given characteristics and graphs.	Supplement with applications of conic sections (radio/cell tower coverage; whispering galleries; kidney stone blaster) Several good conic videos for intro: https://www.youtube.com/watch?v=yUKzpTyhKTs https://www.youtube.com/watch?v=0OmANWjWLf0 orbits https://www.bing.com/videos/search?q=videos+of+elliptical+orbits&&view=detail&mid=F1D8E49ED998EB983173F1D8E49ED998EB983173&rvsmid=225C49EC0C26BA27B187225C49EC0C26BA27B187&fsscr=0&FORM=VDFSRV Definitions: http://www.mathdemos.org/mathdemos/family_of_functions/conic_gallery.html
Sequence and Series	**15. Derive the formula for the sum of a finite**	I can derive the formula for a finite geometric		

(4 ``days)	geometric series (when the common ratio is not 1), and use the formula to solve problems, extending to infinite geometric series. *Examples: calculate mortgage payments; determine the long-term level of medication if a patient takes 50 mg of a medication every 4 hours, while 70% of the medication is filtered out of the patient's blood.*	series. I can solve problems using the sum formulas for a finite and infinite geometric series. Consider a "review" of arithmetic sequences, arithmetic series, geometric sequences and summation notation.		
Matrices (1 day)	22. Represent a system of linear equations as a single matrix equation in a vector variable.	I can write a system of equations as a matrix equation. (The variable matrix is considered a vector because it has one column.)	A 604. Solve systems of two linear equations	
	23. Find the inverse of a matrix if it exists and use it to solve systems of linear equations (using technology for matrices of dimension 3 x 3 or greater).	I can use matrices, inverses and technology to solve systems of equations. I can solve application problems modeled by systems of equations using matrices, inverses and technology.	A 604. Solve systems of two linear equations	
Vectors (6 days)	8. Explain that vector quantities have both magnitude and direction. Represent vector quantities by directed line segments, and use appropriate symbols for vectors and their magnitudes. *Examples*: v, |v|, ||v||, v.	I can define a vector. I can graph a vector. I can use appropriate notation for naming vectors and for the magnitude of a vector.	**Graphically add and subtract vectors and perform scalar multiplication.** **Use coordinates to perform vector operations and to**	Use the Despicable Me clip for definition of a vector. Use NFL Science vector video. https://www.youtube.co

			determine the magnitude and direction of a vector.	[m/watch?v=z19vtrSFyHI&disable_polymer=true]()
	9. Find the components of a vector by subtracting the coordinates of an initial point from the coordinates of a terminal point.	I can write a vector in component form (tail at the origin)	Resolve vectors into horizontal and vertical components Graphically add and subtract vectors and perform scalar multiplication. Use coordinates to perform vector operations and to determine the magnitude and direction of a vector.	ATA Vector Cut and Paste activity is a good review of component form, magnitude and direction
	12. Add and subtract vectors. a. Add vectors end-to-end, component-wise, and by the parallelogram rule, understanding that the magnitude of a sum of two vectors is not always the sum of the magnitudes. b. Given two vectors in magnitude and direction form, determine the magnitude and direction of their sum. c. Explain vector subtraction, **v** – **w**, as **v** + (–**w**), where –**w** is the additive inverse of **w**, with the same magnitude as **w** and pointing in the opposite direction. Represent vector subtraction graphically by connecting the tips in the appropriate order, and perform vector subtraction component-wise.	I can add and subtract vectors by basic computation. I can graphically add vectors. I can graphically subtract vectors by adding the opposite (graph in the opposite direction). Given the magnitude and direction of two individual vectors, I can find the magnitude and directions of the sum of the individual vectors.	Graphically add and subtract vectors and perform scalar multiplication. Use coordinates to perform vector operations and to determine the magnitude and direction of a vector.	Will need to supplement part b and graphing addition/subtraction
	13. Multiply a vector by a scalar. a. Represent scalar multiplication graphically by	I can multiply a vector by a scalar. I can show scalar		Will need to supplement

	scaling vectors and possibly reversing their direction; perform scalar multiplication component-wise. *Example*: $c(v_x, v_y) = (cv_x, cv_y)$ b. Compute the magnitude of a scalar multiple **cv** using $\|\|c\mathbf{v}\|\| = \|c\|v$. Compute the direction of cv knowing that when $\|c\|\mathbf{v} \neq 0$, the direction of **cv** is either along **v** (for $c > 0$) or against **v** (for $c < 0$).	multiplication on a graph. I can find the magnitude of a scalar multiple. I can show graphically that a positive scalar is in the same direction as the original vector and that a negative scalar is in the opposite direction as the original vector.		
	14. Multiply a vector (regarded as a matrix with one column) by a matrix of suitable dimensions to produce another vector. Work with matrices as transformations of vectors.	I can multiply matrices. I can use the basic transformation matrices to translate, reflect and rotate figures.	N 705. Multiply matrices N 706. Apply properties of matrices and properties of matrices as a number system	Supplement with TPT Math Maniacs lesson, homework and quiz
	11. Find the scalar (dot) product of two vectors as the sum of the products of corresponding components and explain its relationship to the cosine of the angle formed by two vectors.	I can find the dot product of two vectors. I can explain the relationship between the dot product and the cosine of the angle formed.		
	10. Solve problems involving velocity and other quantities that can be represented by vectors.	I can solve application problems using vectors.	Solve real-world problems involving vector displacements	
Complex (3 days)	4. Represent addition, subtraction, multiplication, and conjugation of complex numbers geometrically on the complex plane; use properties of this representation for computation.	Review - I can add, subtract, multiply and divide complex numbers algebraically.		ATA complex number review in Unit 1 HW#5 A+ activity for the

	Example: $(-1+\sqrt{3}i)^3=8$ *because* $(-1+\sqrt{3}i)$ *has modulus 2 and argument* 120°.	I can add, subtract, multiply and divide complex numbers geometrically on the complex plane (to derive the shortcuts). I can multiply, divide and find powers of complex numbers using the shortcuts.		graphing portion of this standard
	2. Find the conjugate of a complex number; use conjugates to find moduli and quotients of complex numbers.	I can find the conjugate of a complex number and use it to find the moduli and quotients of complex numbers.		
Polar and Parametric (3 days)	3. Represent complex numbers on the complex plane in rectangular and polar form (including real and imaginary numbers), and explain why the rectangular and polar forms of a given complex number represent the same number.	I can graph a complex number on the rectangular complex plane. I can convert a complex number to polar form. I can convert a number in polar form to complex form. I can graph a number in polar form on a polar graph.		
	5. 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.	I can calculate the distance between complex numbers as the modulus of the difference. I can find the		A+ Complex Number Practice Problems

		midpoint between complex numbers as the average of the endpoints.		
	32. Solve application-based problems involving parametric and polar equations. a. Graph parametric and polar equations. b. Convert parametric and polar equations to rectangular form.	I can solve application problems involving parametric and polar equations.		

Will need to supplement with the Statistics Unit in 2020-21 because stats moved from Precal to Algebra 2 this year…these kids won't get stats unless we add it…standard deviation, normal distribution, z-scores, skewed data, stat vocabulary, etc