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Advanced Topics in Mathematics 2017 – 2018

	Week	Major Concepts / Topics	Possible Resources
Quarter 1 Aug 10 – Oct 13	1 8/10 - 8/11	Chapter 1 – Equations and Inequalities • Lesson 1.1 – Graphs and Graphing Utilities	Lesson 1.1 – Graphing linear functions
	2 8/14 – 8/18	Chapter 1 – Equations and Inequalities • Lesson 1.2 – Linear Equations and Rational Equations • Lesson 1.3 – Models and Applications	Lesson 1.2 – Solving rational equations Interpreting graphs of linear and nonlinear functions Lesson 1.3 – Graphing word problems Modeling with combined functions
	3 8/21 – 8/25	Chapter 2 – Functions and Graphs • Lesson 2.1 – Basics of Functions and Their Graphs • Lesson 2.2 – More on Functions and Their Graphs	Lesson 2.1 – Even, odd functions Lesson 2.2 – Shifting and reflecting functions
	4 8/28 – 9/1	Chapter 2 – Functions and Graphs • Lesson 2.3 – Linear Functions and Slope • Lesson 2.4 – More on Slope	Lesson 2.3 – Graphing linear functions word problems Lesson 2.4 – Recognizing slope of curves
	5 9/5 – 9/8	Chapter 2 – Functions and Graphs • Lesson 2.5 – Transformations of Functions	Lesson 2.5 – Shifting and reflecting functions
	6 9/11 – 9/15	Chapter 2 – Functions and Graphs • Lesson 2.6 – Combinations of Functions; Composite Functions • Lesson 2.7 – Inverse Functions	Lesson 2.6 – Compose functions Lesson 2.7 – Inverses of linear functions
	7 9/18 – 9/22	Chapter 5 – Trigonometric Functions • Lesson 5.1 – Angles and Radian Measure • Lesson 5.2 – Right Triangle Trigonometry	Lesson 5.1 – Radians and arc length Lesson 5.2 – Right Triangles and Trigonometry
	8 9/25 – 9/29	Chapter 5 – Trigonometric Functions • Lesson 5.2 – Right Triangle Trigonometry • Lesson 5.8- Applications of Trigonometric Functions • Lesson 5.3 – Trigonometric Functions of Any Angle	Lesson 5.2 –Trig functions and side ratios in right triangles Lesson 5.8 –Modeling with trigonometric functions Lesson 5.3 – Unit circle trigonometry
	9 10/2 – 10/6	Chapter 5 – Trigonometric Functions • Lesson 5.4 – Trigonometric Functions of Real Numbers; Periodic Functions	Lesson 5.4 – Symmetry and periodicity of trigonometric functions
	10 10/9 – 10/13	Chapter 5 – Trigonometric Functions • Lesson 5.5 – Graphs of Other Trigonometric Functions	Lesson 5.5 – Graphs of trigonometric functions

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	Week	Major Concepts / Topics	Possible Resources
Quarter 2 Oct 16 – Dec 21	1 10/16 – 10/20	Chapter 5 – Trigonometric Functions • Lesson 5.6 – Graphs of Other Trigonometric Functions • Lesson 5.7 – Inverse Trigonometric Functions	Lesson 5.6 – Symmetry and periodicity of trigonometric functions Lesson 5.7 - Inverse trig word problems
	2 10/23 – 10/27	Chapter 5 – Trigonometric Functions • Lesson 5.7 – Inverse Trigonometric Functions • Lesson 5.8 – Applications of Trigonometric Functions • Assessment Chapter 6- Analytic Trigonometry • Lesson 6.1 – Verifying Trigonometric Identities	Lesson 5.8 –Modeling with trigonometric functions Lesson 6.1 – Manipulating trig expressions with Pythagorean identities
	3 10/30 – 11/3	Chapter 6 – Analytic Trigonometry • Lesson 6.2 – Sum and Difference Formulas • Lesson 6.3 – Double-Angle, Power-Reducing, and Half-Angle Formulas • Assessment	Lesson 6.2 – Addition and subtracting trig identities Lesson 6.3 – Applying angle addition formulas Trigonometric Identity Review
	4 11/6 – 11/9	Chapter 6 – Analytic Trigonometry • Lesson 6.5- Trigonometric Equations	Lesson 6.5- Solving Trigonometric Equations
	5 11/13 – 11/17	Chapter 6- Analytic Trigonometry • Lesson 6.5- Trigonometric Equations Chapter 1- Equations and Inequalities • Lesson 1.4 – Complex Numbers	Lesson 1.4 – The imaginary unit and complex numbers
	6 11/20 – 11/21	Chapter 7 – Additional Topics in Trigonometry • Lesson 7.3 – Polar Coordinates	Lesson 7.3 – Polar coordinates
	7 11/27 – 12/1	Chapter 7 – Additional Topics in Trigonometry • Lesson 7.5 – Complex Numbers in Polar Form; DeMoivre's Thoerem	Lesson 7.5 – DeMoivre's Theorem - YouTube
	8 12/4 – 12/8	Chapter 7 – Additional Topics in Trigonometry • Lesson 7.4 – Graphs and Polar Equations	Lesson 7.4 – Complex numbers; Polar form
	9 12/11 – 12/15	Chapter 7 – Additional Topics in Trigonometry • Lesson 7.4 – Graphs and Polar Equations	
	10 12/18 – 12/21	• District Exams	

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Advanced Topics in Mathematics 2017 – 2018

	Week	Major Concepts / Topics	Possible Resources
Quarter 3 Jan 8 – Mar 10	1 1/8 – 1/12	Chapter 1 – Equations and Inequalities • Lesson 1.4 – Complex Numbers • Lesson 1.5 – Quadratic Equations Chapter 3 – Polynomial and Rational Functions • Lesson 3.1 – Quadratic Functions	Lesson 1.5 – Understanding the process for solving quadratic equations
	2 1/16 – 1/19	Chapter 3 – Polynomial and Rational Functions • Lesson 3.2 – Polynomial Functions and Their Graphs • Lesson 3.3 – Dividing Polynomials; Remainder and Factor Theorems	Lesson 3.1 – Quadratic functions-Vertex Form; Quadratic Functions-Standard Form Lesson 3.2 – Polynomial graphs
	3 1/22 – 1/26	Chapter 3 – Polynomial and Rational Functions • Lesson 3.3 – Dividing Polynomials; Remainder and Factor Theorems • Lesson 3.4 – Zeros of Polynomial Functions	Lesson 3.3 – Dividing polynomials; Remainder Theorem Lesson 3.4 – Zeros of Polynomials
	4 1/30 – 2/2	Chapter 3 – Polynomial and Rational Functions • Lesson 3.5 – Rational Functions and Their Graphs	Lesson 3.5 – Graphs of rational functions
	5 2/5 – 2/9	Chapter 4 – Exponential and Logarithmic Functions • Lesson 4.1 – Exponential Functions • Lesson 4.2 – Logarithmic Functions • Lesson 4.3 – Properties of Logarithms	Lesson 4.1 – Exponential Expressions; Exponential Functions Lesson 4.2 – Using logarithms to solve exponential equations Lesson 4.2 – Logarithms Lesson 4.3 – Logarithm properties
	6 2/12 – 2/16	Chapter 4 – Exponential and Logarithmic Functions • Lesson 4.3 – Properties of Logarithms • Lesson 4.4 – Exponential and Logarithmic Equations • Lesson 4.5 – Exponential Growth and Decay; Modeling Data	Lesson 4.4 – Modeling with exponential functions Lesson 4.5 – Exponential growth and decay
	7 2/20 – 2/23	Chapter 4 – Exponential and Logarithmic Functions • Lesson 4.5 – Exponential Growth and Decay; Modeling Data	Lesson 4.5 – Exponential growth and decay word problems
	8 2/26 – 3/2	Chapter 9 – Matrices and Determinants • Lesson 9.3 – Matrix Operations and Their Applications • Lesson 9.5 – Determinants and Cramer's Rule • Lesson 9.4 – Multiplicative Inverses of Matrices and Matrix Equations	Lesson 9.3 – Representing relationships with matrices Lesson 9.5 – Cramer's Rule
	9 3/5 – 3/9	• Chapter 9 – Matrices and Determinants • Lesson 9.4 – Multiplicative Inverses of Matrices and Matrix Equations	Lesson 9.4 – Zero and identity matrices; Multiplying a matrix by a vector

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	10 3/12-3/15	Chapter 2 – Functions and Graphs • Lesson 2.8 – Distance and Midpoint Formulas; Circles Chapter 10 – Conic Sections and Analytic Geometry • Lesson 10.1 – The Ellipse	Lesson 2.8 – Distance formula; Midpoint formula Lesson 10.1 - Ellipses

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	Week	Major Concepts / Topics	Possible Resources
Quarter 4 Mar 21 – May 24	1 3/19 – 3/23	Chapter 10 – Conic Sections and Analytic Geometry • Lesson 10.1 – The Ellipse • Lesson 10.2 – The Hyperbola	Lesson 10.1 - Ellipses Lesson 10.2 – Hyperbolas
	2 4/2 – 4/6	Chapter 10 – Conic Sections and Analytic Geometry • Lesson 10.3 – The Parabola • Topic - Cavalieri's Principle	Lesson 10.3 – Parabolas Cavalieri's Principle – Cavalieri's Principle; Cavalieri's Principle YouTube
	3 4/9 – 4/13	Chapter 11 – Sequences, Induction, and Probability • Lesson 11.1 – Sequences and Summation Notation • Lesson 11.2 – Arithmetic Sequences	Lesson 11.1 – Sequences and Series
	4 4/16 – 4/20	Chapter 11 – Sequences, Induction, and Probability • Lesson 11.2 – Arithmetic Sequences • Lesson 11.3 – Geometric Sequences and Series	Lesson 11.2 – Arithmetic sequences Lesson 11.3 – Geometric series
	5 4/23 – 4/27	Chapter 11 – Sequences, Induction, and Probability • Lesson 11.6 – Counting Principles, Permutations, and Combinations • Lesson 11.7 – Probability	Lesson 11.6 – Combinations and Permutations Lesson 11.7 – Probability - Dependent; Categorical data; Adding probabilities
	6 4/30 – 5/4	Chapter 11 – Sequences, Induction, and Probability • Lesson 11.7 – Probability	
	7 5/7 – 5/11	• Topic - Random Variables	
	8 5/14 – 5/18	• Standards Based Performance Tasks	
	9 5/21 – 5/24	• Final Exams	

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