Algebra III

TERM 1		
Term 1 Dates	**MS College and Career Readiness Standards**	**Core Academic Vocabulary/Resources**
August 6-9, 2024	1 Express sequences and series using recursive and explicit formulas. 2 Evaluate and apply formulas for arithmetic and geometric sequences and series.	Sequence, series, recursive, explicit **Resources:** Edgenuity & Teacher provided resources
August 12-16, 2024	3 Calculate limits based on convergent and divergent series. 4 Evaluate and apply infinite geometric series.	Convergent, divergent **Resources:** Edgenuity & Teacher provided resources
August 19-23, 2024	5 Extend the meaning of exponents to include rational numbers.	Exponents, rational number **Resources:** Edgenuity & Teacher provided resources
August 26-30, 2024	6 Simplify expressions with fractional exponents to include converting from radicals.	Integer, rational, irrational, exponent **Resources:** Edgenuity & Teacher provided resources
September 3-6, 2024	7 Factor algebraic expressions containing fractional exponents.	Algebraic expression **Resources:** Edgenuity & Teacher provided resources
September 9-13, 2024	8 Determine characteristics of graphs of parent functions (domain/range, increasing/decreasing intervals, intercepts, symmetry, end behavior, and asymptotic behavior). 9 Determine the end behavior of polynomial functions.	Parent function **Resources:** Edgenuity & Teacher provided resources
September 16-20, 2024	10 Prove polynomial identities and use them to describe numerical relationships. For example, the polynomial identity $(x2 + y2)2 = (x2 - y2)2 + (2xy)2$ can be used to generate Pythagorean triples.	Polynomial identity **Resources:** Edgenuity & Teacher provided resources
September 23-27, 2024	11 Verify the Binomial Theorem by mathematical induction or by a combinatorial argument. 12 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, with coefficients determined for example by Pascal's Triangle.	Binomial theorem, mathematical induction **Resources:** Edgenuity & Teacher provided resources
September 30 - October 4, 2024	13 Write rational expressions in simplest form.	Integer, rational, irrational, exponent **Resources:** Edgenuity & Teacher provided resources

TERM 2

Term 2 Dates	MS College and Career Readiness Standards	Core Academic Vocabulary/Resources
October 7-11, 2024	14 Decompose a rational function into partial fractions.	Integer, rational, irrational, exponent **Resources:** Edgenuity & Teacher provided resources
October 15-18, 2024	15 Determine asymptotes and holes of rational functions, explain how each was found, and relate these behaviors to continuity.	Asymptote **Resources:** Edgenuity & Teacher provided resources
October 22-25, 2024	16 Add, subtract, multiply and divide rational expressions.	Integer, rational, irrational, exponent **Resources:** Edgenuity & Teacher provided resources
October 28-November 1, 2024	17 Solve polynomial and rational inequalities. Relate results to the behavior of the graphs.	Integer, rational, irrational, exponent, inequality **Resources:** Edgenuity & Teacher provided resources
November 4-8, 2024	18 Find the composite of two given functions and find the inverse of a given function. Extend this concept to discuss the identity function f(x) = x.	Integer, rational, irrational, exponent **Resources:** Edgenuity & Teacher provided resources
November 11-15, 2024	19 Simplify complex algebraic fractions (with/without variable expressions and integer exponents) to include expressing $\frac{f(x+h)-f(x)}{h}$ as a single simplified fraction when f(x) = $\frac{1}{1-x}$	Integer, rational, irrational, exponent **Resources:** Edgenuity & Teacher provided resources
November 18 -22, 2024	20 Find the possible rational roots using the Rational Root Theorem.	Integer, rational, irrational, exponent **Resources:** Edgenuity & Teacher provided resources
December 2-6, 2024	21 Find the zeros of polynomial functions by synthetic division and the Factor Theorem.	Integer, rational, irrational, exponent **Resources:** Edgenuity & Teacher provided resources
December 9-13, 2024	22 Graph and solve quadratic inequalities.	Integer, rational, irrational, exponent **Resources:** Edgenuity & Teacher provided resources
December 16-20, 2024	23 Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.	Integer, rational, irrational, exponent **Resources:** Edgenuity & Teacher provided resources

TERM 3

Term 3 Dates	MS College and Career Readiness Standards	Core Academic Vocabulary/Resources

	MS College and Career Readiness Standards	Core Academic Vocabulary/Resources
January 7-10, , 2025	24 Graph rational functions, identifying zeros and asymptotes when suitable factorizations are available, and showing end behavior.	Integer, rational, irrational, exponent **Resources:** Edgenuity & Teacher provided resources
January 13-17, 2025	25 Compose functions. 26 Verify by composition that one function is the inverse of another.	compose **Resources:** Edgenuity & Teacher provided resources
January 21-24, 2025	27 Read values of an inverse function from a graph or a table, given that the function has an inverse. 28 Produce an invertible function from a non-invertible function by restricting the domain.	Integer, rational, irrational, exponent **Resources:** Edgenuity & Teacher provided resources
January 27-31, 2025	29 Understand the inverse relationship between exponents and logarithms and use this relationship to solve problems involving logarithms and exponents.	Inverse **Resources:** Edgenuity & Teacher provided resources
February 3-7, 2025	30 Use special triangles to determine geometrically the values of sine, cosine, tangent for $\pi/3$, $\pi/4$ and $\pi/6$, and use the unit circle to express the values of sine, cosine, and tangent for $\pi-x$, $\pi+x$, and $2\pi-x$ in terms of their values for x, where x is any real number.	Right triangle **Resources:** Edgenuity & Teacher provided resources
February 10-14, 2025	31 Use the unit circle to explain symmetry (odd and even) and periodicity of trigonometric functions. 32 Choose trigonometric functions to model periodic phenomena with specified amplitude, frequency, and midline.	Unit circle **Resources:** Edgenuity & Teacher provided resources
February 18-21, 2025	33 Understand that restricting a trigonometric function to a domain on which it is always increasing or always decreasing allows its inverse to be constructed.	Sine, cosine, tangent **Resources:** Edgenuity & Teacher provided resources
February 24-28, 2025	34 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.	Sine, cosine, tangent **Resources:** Edgenuity & Teacher provided resources
March 3-7, 2025	35 Prove the addition and subtraction formulas for sine, cosine, and tangent and use them to solve problems.	Sine, cosine, tangent **Resources:** Edgenuity & Teacher provided resources
March 17-21, 2025	37 Graph piecewise defined functions and determine continuity or discontinuities.	Piecewise **Resources:** Edgenuity & Teacher provided resources

TERM 4

Term 4 Dates	MS College and Career Readiness Standards	Core Academic Vocabulary/Resources
March 24-28, 2025	38 Describe the attributes of graphs and the general equations of parent functions (linear, quadratic, cubic, absolute value, rational, exponential, logarithmic, square root, cube root, and greatest integer).	Integer, rational, irrational, exponent, logarithmic **Resources:** Edgenuity & Teacher provided resources

March 31- April 4, 2025	39 Explain the effects of changing the parameters in transformations of functions.	Integer, rational, irrational, exponent **Resources:** Edgenuity & Teacher provided resources
April 7-11, 2025	40 Predict the shapes of graphs of exponential, logarithmic, rational, and piece-wise functions, and verify the prediction with and without technology.	Integer, rational, irrational, exponent, logarithmic **Resources:** Edgenuity & Teacher provided resources
April 14-17, 2025	41 Relate symmetry of the behavior of even and odd functions.	Symmetry **Resources:** Edgenuity & Teacher provided resources
April 22-25, 2025	42 Derive the formula $A = 1/2\ ab\ \sin(C)$ for the area of a triangle by drawing an auxiliary line from a vertex perpendicular to the opposite side.	Area **Resources:** Edgenuity & Teacher provided resources
April 28 - May 2, 2025	43 Prove the Laws of Sines and Cosines and use them to solve problems.	Law of sines, law of cosines **Resources:** Edgenuity & Teacher provided resources
May 5-9, 2025	44 Understand and apply the Law of Sines and the Law of Cosines to find unknown measurements in right and non-right triangles (e.g., surveying problems, resultant forces).	Law of sines, law of cosines **Resources:** Edgenuity & Teacher provided resources
May 12-15, 2025	45 Analyze expressions in summation and factorial notation to solve problems. 46 Prove statements using mathematical induction.	Summation, factorial **Resources:** Edgenuity & Teacher provided resources