Essential Math-SE Curriculum

- **Unit 1 – Number Sense and Algebraic Thinking**

  This unit covers adding, subtracting, multiplying, and dividing whole numbers, sums, differences, products, and quotients, whole number estimation, powers, exponents, order of operations, variables, expressions, variable equations, and area and perimeter of rectangles.

- **Unit 2 – Decimals and Decimal Operations**

  This unit covers decimals and place value, ordering, rounding, adding, and subtracting decimals, as well as properties of addition and multiplication, the distributive property, multiplying and dividing decimals by whole numbers and by powers of ten. Also covered are metric length, mass, and capacity.

- **Unit 3 – Fractions**

  This unit covers divisibility rules, prime and composite numbers, prime factorization, greatest common factors, equivalent fractions, least common multiples, ordering fractions, measuring in inches, mixed numbers, and changing decimals to fractions and vice versa.

- **Unit 4 – Fraction Operations**

  This unit covers adding and subtracting fractions, mixed numbers, and measures of time, using renaming, multiplying fractions with whole numbers, fractions with fractions, and mixed numbers, as well as dividing fractions, dividing mixed numbers, and length, weight, and capacity in customary units, and changing units by multiplying by a form of one.

- **Unit 5 – Rate, Proportion and Percent**

  This unit discusses ratios, rates, solving proportions, and percents including finding the percent of a number, and understanding percents, decimals and fractions.

FUNMath Curriculum

- **Unit 1 – Introduction and Basic Foundation**

  This unit covers addition, subtraction, multiplication, and division of whole numbers, divisibility rules, prime and composite numbers, greatest common factors, prime factorization, place value, estimating, order of operations, powers of ten, and formulas and variables.

- **Unit 2 – Fractions**

  This unit discusses ratios, rates, proportions, improper and mixed fractions, simplifying fractions, least common multiples, adding, subtracting, multiplying, and dividing fractions and mixed numbers.

- **Unit 3 – Decimals**

  This unit covers adding, subtracting, and multiplying decimals, as well as dividing decimals by whole numbers and by powers of ten, comparing and ordering decimals, and terminating and repeating decimals.

- **Unit 4 – Decimals and Fractions**

  This unit discusses standard and scientific notation, the metric system, forms and types of percent, simple interest and applied percent, and circle graphs.

- **Unit 5 – Probability**

  This unit covers the counting principle, tree diagrams, basic probability, independent and dependent events, using probability for prediction, factorials, permutations, and combinations.

- **Unit 6 – Statistics**

  This unit discusses mean, median, mode, range, frequency tables, and pictographs. Also covered are reading and interpreting graphs; bar, broken-line, and other graphs; and misleading statistics.

- **Unit 7 – Geometry of Angles and Lines**

  This unit discusses geometry symbols, planes, points, lines (including parallel lines and transversals), and angles.

- **Unit 8 – Polygons**

  This unit discusses triangles, quadrilaterals, and other polygons, as well as angles in triangles and regular polygons.

- **Unit 9 – Perimeter, Area, and Volume**

  This unit covers perimeter, area, volume, and surface area.

- **Unit 10 – Miscellaneous Geometry**

  This unit discusses square roots, the Pythagorean Theorem, circles, transformations, and symmetry.

- **Unit 11 – Pre-Algebra**

  This unit covers set notation and Venn Diagrams, comparing, ordering, adding, subtracting, multiplying and dividing integers, absolute value, and order of operations. Also covered are the zero, identity, commutative, associative, and distributive properties, and basic graphing including ordered pairs and the coordinate plane.

- **Unit 12 – Beginning Algebra**

  This unit covers comparing, ordering, adding, subtracting, multiplying, and dividing rational numbers, as well as expressions and equations, order of operations with and without variables, and the meaning of algebraic symbols. Also discussed are one- and two -step equations, decimals and fractions, formulas, literal equations, patterns, functions, graphing straight lines, slope, and basic inequalities.

- **Unit 13 – Bonus Lessons**

  This unit includes significant figures, degree of precision, addition and subtraction in scientific notation, and real-world applications of scientific notation.

Pre-Algebra-SE Curriculum

- **Unit 1 – Introduction and Basic Foundation**

  This unit covers addition, subtraction, multiplication, and division of whole numbers, prime and composite numbers, greatest common factors, prime factorization, place value, estimating, order of operations, powers of ten, and formulas and variables.

- **Unit 2 – Fractions**

  This unit discusses ratios, rates, proportions, improper and mixed fractions, simplifying fractions, least common multiples, adding, subtracting, multiplying, and dividing fractions and mixed numbers.

- **Unit 3 – Decimals, Fractions, and Percents**

  This unit covers adding, subtracting, and multiplying decimals, as well as dividing decimals by whole numbers, comparing and ordering decimals, forms and types of percent, and simple interest.

- **Unit 4 – Probability and Statistics**

  This unit covers basic probability, mean, median, mode, range, frequency tables, bar graphs and broken-line graphs.

- **Unit 5 – Geometry Basics**

  This unit discusses geometry symbols, planes, points, lines, and angles. It also covers triangles, quadrilaterals, and other polygons, with particular emphasis on triangles.

- **Unit 6 – More Geometry**

  This unit discusses length and perimeter, area in two-dimensional shapes, and volume in three-dimensional figures. Also covered are square roots, the Pythagorean Theorem, and circles.

- **Unit 7 – Pre-Algebra**

  This unit covers comparing and ordering, adding, subtracting, multiplying and dividing integers, absolute value, and order of operations. Also covered are the properties of mathematics, and basic graphing including ordered pairs and the coordinate plane.

- **Unit 12 – Beginning Algebra**

  This unit covers comparing, ordering, adding, subtracting, multiplying, and dividing rational numbers, as well as expressions and equations, order of operations with and without variables, and the meaning of algebraic symbols. Also discussed are one- and two -step equations, decimals and fractions, formulas, and literal equations.

Algebra Curriculum

- **Unit 1 – Foundations of Algebra**

This unit covers verbal and algebraic expressions and algebraic patterns, order of operations, open sentences, basic properties of algebra, arithmetic with integers, and absolute value.

- **Unit 2 – Rational and Irrational numbers.**

This unit discusses comparing, ordering, adding, subtracting, multiplying and dividing rational numbers, as well as square roots, squares, and irrationals.

- **Unit 3 – Equations and Their Applications**

This unit covers one-step equations using addition, subtraction, multiplication, and division, as well as properties of equality, two-step equations, complement, supplement, number, perimeter, and angle problems, clearing fractions and decimals, consecutive integers, and multi-step and literal equations.

- **Unit 4 – More Applications with Equations**

This unit discusses solving proportions. It also discusses similar triangles, percents, simple interest, percent of increase or decrease, probability and odds, mixtures, and uniform motion.

- **Unit 5 – Foundations of Graphing**

This unit covers ordered pairs and relations, graphing linear equations, writing equations from relations, definitions of and calculating slope, and point-slope and slope-intercept formulas.

- **Unit 6 – More Graphing Concepts**

This unit presents shortcuts to graphing, parallel and perpendicular slopes and equations of them, midpoints, graphing absolute value, parabolas, and solving equations with a calculator.

- **Unit 7 – Inequalities**

This unit discusses solving inequalities using addition, subtraction, multiplication, and division, as well as multi-step inequalities and graphing inequalities.

- **Unit 8 – Systems of Equations**

This unit discusses solving systems of equations by graphing, substitution, addition, and multiplications. It also discusses graphing systems of inequalities.

- **Unit 9 – Polynomials**

This unit covers polynomials and uses algebra tiles to demonstrate them, as well as to demonstrate adding, subtracting, multiplying, and dividing polynomials. It also discusses multiplying polynomials by monomials.

- **Unit 10 – More Operations with Polynomials**

This unit discusses multiplying polynomials, special binomial products, factoring polynomials, binomial factors, and using FOIL for multiplying binomials and factoring. It also discusses using the zero product property to solve equations.

- **Unit 11 – Rational Expressions**

This unit covers simplifying, adding, subtracting, multiplying and dividing rational expressions, and dividing a polynomial by a binomial.

- **Unit 12 – Radical Expressions and Equations**

This unit covers simplifying square roots and radical expressions, and rationalizing denominators. It also covers radical expressions and radical equeations.

- **Unit 13 – Distance Formula and Quadratic Equations**

This unit explains the distance formula, quadratic equations, completing the square, the quadratic formula, and rules of exponents.

- **Unit 14 – Bonus Lessons**

This unit includes converting units for derived quantities, adding and subtracting quantities in and averaging data with different units, as well as conversion between measurement systems, piece-wise linear and exponential function, and modeling using exponential functions. Also covered are rate of change, linear and non-linear recursive formulas, modeling, probability and its complement, experimental, empirical, and conditional probability, the two-way table, th law of large numbers, combinations, Pascal's triangle, the rule of four, variations, analyzing situations including system so equations and systems of inequalities, and quadratic equation solutions and roots.

Algebra-SE Curriculum

- **Unit 1 – Foundations of Algebra**

  This unit covers verbal and algebraic expressions and algebraic patterns, order of operations, basic properties of algebra, arithmetic with integers, number sets and absolute value. It also discusses comparing, ordering, adding, subtracting, multiplying and dividing rational numbers, as well as square roots, squares, and irrationals.

- **Unit 2 – Equations and Their Applications**

  This unit covers one-step equations using addition, subtraction, multiplication, and division, as well as properties of equality, two-step equations, complement, supplement, number, perimeter, and angle problems, clearing fractions and decimals, consecutive integers, and multi-step and literal equations.

- **Unit 3 – More Applications with Equations**

  This unit discusses solving proportions. It also discusses similar triangles, percents, simple interest, percent of increase or decrease, probability and odds.

- **Unit 4 – Foundations of Graphing**

  This unit covers ordered pairs and relations, graphing linear equations, definitions of and calculating slope, and point-slope and slope-intercept formulas.

- **Unit 5 – Inequalities and Systems of Equations**

  This unit discusses solving inequalities using addition, subtraction, multiplication, and division, as well as multi-step inequalities and solving systems by substitution, addition, and multiplication.

- **Unit 6 – Polynomials**

  This unit covers polynomials and uses algebra tiles to demonstrate them, as well as to demonstrate adding, subtracting, multiplying, and dividing polynomials. It also discusses multiplying polynomials by monomials.

- **Unit 7 – More Operations with Polynomials**

  This unit discusses multiplying polynomials, special binomial products, factoring polynomials, binomial factors, and using FOIL for multiplying binomials and factoring. It also discusses using the zero product property to solve equations, simplifying, rational expressions, and dividing a polynomial by a binomial.

Algebra II Curriculum

- **Unit 1 – Real Numbers, Algebra, and Problem Solving**

This unit covers real numbers and operations, multiplication and division of real numbers, algebraic expressions and properties of numbers, the distributive property, one-step equations, writing equations, exponential and scientific notation, properties of exponents, field axioms, theorems, and proofs.

- **Unit 2 – Equations and Inequalities**

This unit discusses solving and using equations, solving formulas and inequalities, using inequalities, compound inequalities, and absolute value.

- **Unit 3 – Relations, Functions, and Graphs**

This unit covers relations and ordered pairs, graphs, the definition of a function, graphs and linear equations, slope, equations of lines, parallel and perpendicular lines, the absolute value function, and composition of functions.

- **Unit 4 – Systems of Equations and Problem Solving**

This unit discusses systems of equations in two and three variables, solving systems of equations, using systems of two and three equations,consistent and dependent systems, and systems of inequalities.

- **Unit 5 – Polynomials and Polynomial Equations**

This unit covers polynomials and polynomial functions, addition, subtraction, and multiplication of polynomials, factoring, the big X method of factoring, and solving equations by factoring.

- **Unit 6 – Rational Expressions and Equations**

This unit discusses addition, subtraction, multiplication, and simplification of rational expressions, complex rational expressions, division of polynomials, synthetic division, solving rational equations, and formulas.

- **Unit 7 – Powers, Roots, and Complex Numbers**

This unit discusses radical expressions, multiplying, simplifying, solving, and operations with radical expressions, rational numbers as exponents, and imaginary and complex numbers.

- **Unit 8 – Quadratic Equations**

This unit discusses using quadratic equations, the quadratic formula, solving quadratic equations, reducing equations to quadratic form, formulas, and problem solving.

- **Unit 9 – Quadratic Functions and Transformations**

This unit covers symmetry, transformations of functions, stretching, shrinking, and reflecting functions, graphs of and standard form for quadratic functions, graphs, and x-intercepts.

- **Unit 10 – Equations of Second Degree**

This unit includes coordinate geometry, circles as conic sections, ellipses, hyperbolas, parabolas, second-degree equations, and systems.

- **Unit 11 – Polynomial Functions**

This unit discusses polynomial functions, the remainder and factor theorems, rational roots, theorems about roots, graphs, and polynomial functions.

- **Unit 12 – Exponential and Logarithmic Functions**

This unit discusses inverse functions, exponential and logarithmic functions and relationships, properties and values of logarithmic functions, exponential and logarithmic equations, natural logarithms, and the number e.

- **Unit 13 – Bonus Lessons: More Functions**

This unit discusses rational functions and using them to model situations, and the greatest integer function.

- **Unit 14 – Bonus Lessons; Matrices**

This unit discusses adding and subtracting matrices, as well as scalar multiplication of matrices.

- **Unit 15 – Bonus Lessons: Probability and Statistics**

This unit discusses probability, conditional probability, probability with combinations, categorical data, numerical data with one variable, effects of outliers, the normal curve, and calculating probabilities with the normal curve. Also covered are bivariate statistics, sampling, statistical experiment, analyzing data, central limit theorem, discrete PDF, and expected value.

Geometry Curriculum

- **Unit 1 – Measure**

  This unit covers points, segments, and length, the pythagorean theorem, distance formula, rays, angles, and planes. Also discussed are measuring angles and perpendiculars, and congruency in size and shape.

- **Unit 2 – Logic**

  This unit discusses inductive and deductive reasoning, if-then statements, truth tables, converse and inverse, contrapositive, postulates, and proofs.

- **Unit 3 – Transformations**

  This unit covers reflections, rotations, translations, vectors, dilations, tessellations, and symmetry.

- **Unit 4 – Congruent Angles**

  This unit discusses the angle-addition and corresponding-angle postulates, complement and supplement, vertical angles, angle bisectors, transversals, and alternate interior and corresponding angles.

- **Unit 5 – Triangles - Part A**

  This unit covers triangle classification, the 180 Degree Theorem, exterior angles, and congruency of triangles. Also covered are SSS and SAS, as well as ASA and SAA.

- **Unit 6 – Triangles - Part B**

  This unit discusses the Hypotenuse-Leg (HL) and Isosceles Triangle Theorems, as well as perpendicular bisectors, angle bisectors, altitudes, and medians.

- **Unit 7 – Area & Pythagorean Theorem**

  This unit discusses area versus perimeter, polygons, geometric probability, area under a curve, the Pythagorean Theorem and distance, 30-60-90 and 45-45-90 triangles, and the converse of the Pythagorean Theorem.

- **Unit 8 – Polygons**

  This unit discusses quadrilaterals, parallelograms, rhombi, rectangles, squares, polygons, and regular polygons.

- **Unit 9 – Polyhedra**

  This unit covers polyhedra and regular polyhedra, as well as Euler's Formula.

- **Unit 10 – Similarity**

  This unit discusses square roots, the Pythagorean Theorem, circles, transformations, and symmetry.

- **Unit 11 – Circles - Part A**

  This unit covers definitions of circles, including radius, diameter, and chord, as well as tangent lines and formulas for circumference and area.

- **Unit 12 – Circles - Part B**

  This unit covers arcs, arc length, inscribed angles, and area of a sector, as well as properties of radius, chord, secant, and tangent lines.

- **Unit 13 – Surface Area**

  This unit includes surface area of prisms, pyramids, cylinders, cones, and spheres.

- **Unit 14 – Volume**

  This unit discusses the volume of prisms, pyramids, cylinders, cones, and spheres, as well as ratios of surface area and volume, and changing units of measure.

- **Unit 15 – Problem Solving**

  This unit covers problems solving with geometry.

- **Unit 16 – Bonus Lessons**

  This unit includes discussions of non-Euclidean geometry, coordinate and alternate proofs, triangle-inequality theorem, creating 3-D figures from 2-D figure transformations, intersecting a plane with a 3-D figure, and isometric and orthogonal projections. Also discussed are technology with triangle centers, with parallel lines, with circumference and area of circles, with ratios of similar figures, with perpendicular bisectors, with circles and lines that intersect them, and with tessellations. Further included are discussions of geometric constructions, nets and using them to construct 3-D geometric figures, and graph theory.

Geometry-SE Curriculum

- **Unit 1 – Measure**

  This unit covers the pythagorean theorem, rays, angles, and planes, measuring angles and perpendiculars, and congruency in size and shape.

- **Unit 2 – Logic**

  This unit discusses inductive and deductive reasoning, if-then statements, truth tables, postulates, and proofs.

- **Unit 3 – Transformations**

  This unit covers reflections, rotations, translations, dilations, tessellations, and symmetry.

- **Unit 4 – Congruent Angles**

  This unit discusses the angle-addition and corresponding-angle postulates, complement and supplement, vertical angles, angle bisectors, transversals, and alternate interior and corresponding angles.

- **Unit 5 – Triangles - Part A**

  This unit covers triangle classification, the 180 Degree Theorem, exterior angles, and congruency of triangles. Also covered are SSS and SAS, as well as ASA and SAA.

- **Unit 6 – Area & Pythagorean Theorem**

  This unit discusses area versus perimeter, polygons, and 30-60-90 and 45-45-90 triangles.

- **Unit 7 – Polygons**

  This unit discusses quadrilaterals, parallelograms, rhombi, rectangles, squares, polygons, regular polygons, and polyhedra.

- **Unit 8 – Similarity**

  This unit defines similarity and discusses the perimeter and area of similar figures, as well as AA, SSS, and SAS.

- **Unit 9 – Circles**

  This unit covers radius, diameter, and chord, as well as tangent lines and formulas for circumference and area of circles.

- **Unit 10 – Surface Area**

  This unit includes surface area of prisms, cylinders, and spheres.

- **Unit 11 – Volume**

  This unit discusses the volume of prisms, cylinders, and spheres.

Trigonometry Curriculum

- **Unit 1 – Preliminaries**

  This unit covers similarity and proportion, 30-60-90 and 45-45-90 right triangles, rationalizing the denominator, degrees, minutes, and seconds.

- **Unit 2 – Right Triangle Trigonometry**

  This unit discusses sine, cosine and tangent, word problems for each, as well as pythagorean and tangent identities.

- **Unit 3 – Circles**

  This unit covers radians and special angles, arc length, sector area, extended angles - coterminal, unit circle, and new definitions.

- **Unit 4 – Additional Functions**

  This unit discusses reciprocal and inverse functions.

- **Unit 5 – Solving Non-Right Triangles**

  This unit covers areas of triangles and the laws of sines and cosines.

- **Unit 6 – Vectors**

  This unit discusses magnitude and directions, horizontal and vertical components, adding vectors geometrically and algebraically, and compass headings.

- **Unit 7 – Powers, Roots, and Complex Numbers**

  This unit discusses graphs of sine, cosine, tangent, secant, cosecant, and cotangent. Also covered are amplitude, period, horizontal and vertical translations, and a review of graphing concepts.

- **Unit 8 – Identities**

  This unit reviews identities and discusses cofunction and negative angle identities, and simplifying expressions.

- **Unit 9 – Solving Trignometric Equations**

  This unit covers combining like terms, square roots, factoring, and quadratics.

- **Unit 10 – More Identities**

  This unit includes sum and difference formulas for sine, cosine, and tangent, as well as double-angle formulas, and half-angle formulas.

- **Unit 11 – Problem Solving**

  This unit discusses problem solving in trigonometry.

Pre-Calculus Curriculum

- **Unit 1 – Pre-Calculus Review**

This unit covers parent functions, polynomial - power functions, and trigonometric functions, as well as radical, rational, inverse, logarithmic, and exponential functions, and polynomial inequalities.

- **Unit 2 – Limits and Continuity**

This unit discusses computations of limits, indeterminate forms, limits to infinity, proving continuity, intermediate value theorem, and types of discontinuity.

- **Unit 3 – Derivatives: Part I**

This unit covers average versus instantaneous velocity, the tangent of $y=x^2$ and of $y=1/x$, the general rule of the derivative, derivatives of constant and linear functions, the power rule for derivatives, and combination rules: sum and difference, product rule, and quotient rule.

- **Unit 4 – Derivatives: Part II**

This unit discusses tangent and normal lines, approximating values of functions using local linearization, local linearity and differentiability, derivatives of trigonometric functions, product and quotient rules with trigonometric and algebraic functions, numerical derivative witha calculator, predicting what f'(x0 looks like graphically, and the graph of the derivative (calculator based).

- **Unit 5 – Derivatives: Part III**

This unit covers the chain rule and chain rule activity, velocity of a particle in motion, acceleration with analysis, implicit differentiation: the differential method and the y' method.

- **Unit 6 – Derivatives: Part IV**

This unit discusses the derivative of the exponential function, inverse functions and derivatives, properties of logarithms, derivative of the logarithmic functions, logarithmic differentiation, combination rules, and derivatives of inverse trigonometric functions.

- **Unit 7 – Derivatives: Part V**

This unit discusses analysis using first and second derivatives, absolute extrema, optimization problems, related rates, and mean value theorem for derivatives.

- **Unit 8 – Anti-Differentiation: Part I**

This unit includes anti-differentiation, the chain rule and anti-differentiation, U-substitution, anti-derivatives with initial conditions, particle motion, exponential growth, decay and Newton's law of cooling, slope fields, and slope fields with initial value problems.

- **Unit 9 – Anti-Differentiation: Part II**

This unit covers definite integrals, the fundamental theorem o f calculus, approximate area using numerical methods, Riemann Sums - midpoint, net area, definite integrals with calculator, properties of the definite integral, U-substitution with definite integrals, and the velocity/position connection.

- **Unit 10 – Anti-Differentiation: Part III**

This unit discusses numerical approximations: the trapezoid rule, area under a curve, area of a region between two curves, and the average rule.

- **Unit 11 – Anti-Differentiation: Part IV**

This unit discusses volumes of solids of revolution: the disc, washer, and shell methods, as well as volume of solids with known cross sections, arc length and surfaces of revolution, integration to find surface area, work problems, and liquid pressure and fluid force.

- **Unit 12 – Anti-Differentiation: Part V**

This unit reviews integrals and discusses integration by parts, Newton's Method, indeterminate forms and L"Hopital's Rule, inverse trigonometric integrals, velocity, acceleration, and preparing for the AP Calculus AP Exam.

AP Calculus AB Curriculum

- **Unit 1 – Pre-Calculus Review**

This unit covers parent functions, polynomial - power functions, and trigonometric functions, as well as radical, rational, inverse, logarithmic, and exponential functions, and polynomial inequalities.

- **Unit 2 – Limits and Continuity**

This unit discusses computations of limits, indeterminate forms, limits to infinity, proving continuity, intermediate value theorem, and types of discontinuity.

- **Unit 3 – Derivatives: Part I**

This unit covers average versus instantaneous velocity, the tangent of $y=x^2$ and of $y=1/x$, the general rule of the derivative, derivatives of constant and linear functions, the power rule for derivatives, and combination rules: sum and difference, product rule, and quotient rule.

- **Unit 4 – Derivatives: Part II**

This unit discusses tangent and normal lines, approximating values of functions using local linearization, local linearity and differentiability, derivatives of trigonometric functions, product and quotient rules with trigonometric and algebraic functions, numerical derivative witha calculator, predicting what f'(x0 looks like graphically, and the graph of the derivative (calculator based).

- **Unit 5 – Derivatives: Part III**

This unit covers the chain rule and chain rule activity, velocity of a particle in motion, acceleration with analysis, implicit differentiation: the differential method and the y' method.

- **Unit 6 – Derivatives: Part IV**

This unit discusses the derivative of the exponential function, inverse functions and derivatives, properties of logarithms, derivative of the logarithmic functions, logarithmic differentiation, combination rules, and derivatives of inverse trigonometric functions.

- **Unit 7 – Derivatives: Part V**

This unit discusses analysis using first and second derivatives, absolute extrema, optimization problems, related rates, and mean value theorem for derivatives.

- **Unit 8 – Anti-Differentiation: Part I**

This unit includes anti-differentiation, the chain rule and anti-differentiation, U-substitution, anti-derivatives with initial conditions, particle motion, exponential growth, decay and Newton's law of cooling, slope fields, and slope fields with initial value problems.

- **Unit 9 – Anti-Differentiation: Part II**

This unit covers definite integrals, the fundamental theorem o f calculus, approximate area using numerical methods, Riemann Sums - midpoint, net area, definite integrals with calculator, properties of the definite integral, U-substitution with definite integrals, and the velocity/position connection.

- **Unit 10 – Anti-Differentiation: Part III**

This unit discusses numerical approximations: the trapezoid rule, area under a curve, area of a region between two curves, and the average rule.

- **Unit 11 – Anti-Differentiation: Part IV**

This unit discusses volumes of solids of revolution: the disc, washer, and shell methods, as well as volume of solids with known cross sections, arc length and surfaces of revolution, integration to find surface area, work problems, and liquid pressure and fluid force.

- **Unit 12 – Anti-Differentiation: Part V**

This unit reviews integrals and discusses integration by parts, Newton's Method, indeterminate forms and L"Hopital's Rule, inverse trigonometric integrals, velocity, acceleration, and preparing for the AP Calculus AP Exam.