



**DEPARTMENT OF SCHOOL EDUCATION
TAMIL NADU**

**Syllabus
2020 - 21**

STANDARD - 11

CLASS: 11

UNIT	CONTENT
1. Sets, Relations and Functions	1.1. Introduction 1.2. Sets 1.2.1. Properties of Set Operations 1.4. Constants and Variables, Intervals and Neighborhoods 1.4.1. Constants and Variables 1.4.2. Intervals and Neighborhoods 1.5. Relations 1.5.1. Type of Relations 1.6. Functions 1.6.1. Ways of Representing Functions 1.6.2. Some Elementary Functions 1.6.5. Inverse of a Function 1.6.6. Algebra of Functions 1.6.7. Some Special Functions
2. Basic Algebra	2.1. Introduction 2.3. Absolute Value 2.3.1. Definition and Properties 2.3.2. Equations Involving Absolute Value 2.3.3. Some Results For Absolute Value 2.3.4. Inequalities Involving Absolute Value 2.4. Linear Inequalities 2.5. Quadratic Functions 2.5.1. Quadratic Formula 2.5.2. Quadratic Inequalities 2.7. Rational Functions 2.7.1. Rational Inequalities 2.7.2. Partial Fractions 2.8. Exponents and Radicals 2.8.1. Exponents 2.8.2. Radicals

	<ul style="list-style-type: none">2.8.3. Exponential Function2.9. Logarithm2.9.1. Properties of Logarithm2.10. Application of Algebra in Real Life
3. Trigonometry	<ul style="list-style-type: none">3.1. Introduction3.2. A recall of basic results3.2.5. Co terminal angles3.3. Radian Measure3.3.1. Relationship between Degree and Radian Measures3.4. Trigonometric functions and their properties3.4.1. Trigonometric Functions of any angle in terms of Cartesian coordinates3.4.2. Trigonometric Functions of real numbers3.4.3. Allied Angles3.4.4. Some Characteristics of Trigonometric Functions3.5. Trigonometric Identities3.5.1. Sum and difference identities or compound angles formulas3.5.2. Multiple angle identities and submultiple angle identities3.5.3. Product to Sum and Sum to Product Identities
4. Combinatorics and Mathematical Induction	<ul style="list-style-type: none">4.1. Introduction4.2. Fundamental principles of counting4.3. Factorials4.4. Permutations (Theorem 4.1-4.3 without proof)4.4.1. Permutations of distinct objects4.4.2. Properties of Permutations. (without proof)4.4.3. Objects always together (String method)4.4.4. No two things are together (Gap method)4.4.5. Permutations of not all distinct objects4.5. Combinations

	4.5.1. Properties of Combinations (without proof)
	4.6. Mathematical induction
5. Binomial Theorem, Sequences and Series	5.1. Introduction (Theorem 5.2, 5.3 without proof)
	5.4. Finite Sequences
	5.4.1. Arithmetic and Geometric Progressions
	5.5. Finite Series
	5.5.2. Telescopic Summation for Finite Series
	5.6. Infinite Sequences and Series
	5.6.1. Fibonacci Sequence
	5.6.2. Infinite Geometric Series
	5.6.4. Telescopic Summation for Infinite Series
	5.6.5. Binomial Series
6. Two Dimensional Analytical Geometry	6.1. Introduction
	6.2. Locus of a point
	6.3. Straight Lines
	6.3.1. The relationship between the angle of inclination and slope
	6.3.2. Intercepts of a Line
	6.3.3. Different Forms of an equation of a straight line
	6.3.4. General form to other forms
	6.4. Angle between two straight lines
	6.4.1. Condition for Parallel Lines
	6.4.2. Condition for perpendicular Lines
	6.4.3. Position of a point with respect to a straight line
	6.4.4. Distance Formulas
	6.4.5. Family of lines
	6.4.6. One parameter families
	6.4.7. Two parameters families
	6.5. Pair of Straight Lines
	6.5.1. Pair of Lines Passing through the Origin
	6.5.2. Angle between Pair of Straight Lines
	6.5.3. Equation of the bisectors of the angle between the lines $a\chi^2+2h\chi\gamma+b\gamma^2=0$
	6.5.4. General form of Pair of Straight Lines

7. Matrices and Determinants	7.1. Introduction 7.2. Matrices 7.2.4. Properties of Matrix Addition, Scalar Multiplication and Product of Matrices 7.2.5. Operation of Transpose of a Matrix and its Properties 7.2.6. Symmetric and Skew-symmetric Matrices 7.3. Determinants 7.3.1. Determinants of Matrices of different order 7.3.2. Properties of Determinants (without proof) 7.3.3. Application of Factor Theorem to Determinants. 7.3.4. Product of Determinants 7.3.5. Relation between a Determinant and its Cofactor Determinant 7.3.6. Area of a Triangle 7.3.7. Singular and non Singular matrix
8. Vector Algebra-I	8.1. Introduction 8.2. Scalars and Vectors 8.3. Representation of a vector and types of vectors 8.4. Algebra of Vectors 8.4.1. Addition of Vectors 8.4.2. Difference between two Vectors 8.4.3. Scalar multiplication of a vector 8.4.4. Some properties and results 8.5. Position vectors 8.6. Resolution of Vectors 8.6.1. Resolution of a vector in two dimension 8.6.2. Resolution of a vector in three dimension 8.6.3. Matrix representation of a vector 8.7. Direction Cosines and Direction Ratios 8.8. Product of Vectors 8.8.1. Angle between two vectors 8.8.2. Scalar product

	<ul style="list-style-type: none">8.8.3. Properties of Scalar Product (without proof)8.8.4. Vector Product8.8.5. Properties of vector product (without proof)
9. Differential Calculus- Limits and Continuity	<ul style="list-style-type: none">9.1. Introduction (Theorem 9.4 and Results 9.1-9.4 without proof)9.2. Limits<ul style="list-style-type: none">9.2.1. The calculation of limits9.2.2. One sided limits9.2.3. Theorems on limits9.2.4. Infinite limits and limits at infinity9.2.5. Limits at infinity9.2.6. Limits of rational functions9.2.7. Applications of limits9.2.8. Sandwich Theorem9.2.9. Two special Trigonometrical limits9.2.10. Some important other limits9.3. Continuity<ul style="list-style-type: none">9.3.1. Examples of functions Continuous at a point9.3.2. Algebra of continuous functions9.3.3. Removable and Jump Discontinuities
10. Differential Calculus- Differentiability and Methods of Differentiation	<ul style="list-style-type: none">10.1. Introduction (Theorem 10.1-10.6 without proof)10.2. The concept of derivative<ul style="list-style-type: none">10.2.1. The tangent line problem10.2.2. Velocity of Rectilinear motion10.2.3. The derivative of a Function10.2.4. One sided derivatives (left hand and right hand derivatives)10.3. Differentiability and Continuity10.4. Differentiation Rules<ul style="list-style-type: none">10.4.1. Derivatives of basic elementary functions10.4.2. Examples on Chain Rule10.4.3. Implicit Differentiation

	<p>10.4.4. Logarithmic Differentiation 10.4.5. Substitution method 10.4.6. Derivatives of variables defined by parametric equations 10.4.7. Differentiation of one function with respect to another function : 10.4.8. Higher order Derivatives</p>
11. Integral Calculus	<p>11.1. Introduction 11.2. Newton-Leibnitz Integral 11.3. Basic Rules of Integration 11.4. Integrals of the Form $\int f(ax+b)dx$ 11.5. Properties of Integrals (without proof) 11.6. Simple applications 11.7. Methods of Integration 11.7.1. Decomposition method 11.7.2. Decomposition by Partial Fractions 11.7.3. Method of substitution or change of variable 11.7.4. Important Results 11.7.5. Integration by parts 11.7.6. Bernoulli's formula for Integration by Parts 11.7.8. Integrals of the form (i) $\int e^{ax} \sin bx dx$ (ii) $\int e^{ax} \cos bx dx$ 11.7.9. Integration of Rational Algebraic Functions</p>
12. Introduction to probability Theory	<p>12.1. Introduction 12.2. Basic definitions 12.3. Finite sample space (Theorem 12.3-12.6, 12.8, 12.10, 12.11 without proof) 12.4. Probability 12.4.3. ODDS 12.5. Some basic Theorems on Probability 12.6. Conditional Probability 12.6.1. Independent Events 12.7. Total Probability of an event 12.8. Bayes' Theorem</p>
<p>(*All examples and exercise problems for the content mentioned above)</p>	