

SEMANA	SESSION	CONTENTS	Theory	Practice
1	1	<p>The Real Numbers and the Cartesian Plane. Notation for the logic structure of Mathematics: Quantifiers, Implications and Equivalence. The real numbers. The real line. Absolute value and distance on the real line. Intervals: segments and rays. Intersection and union of sets. Inequalities. Points, distance and the midpoint formula. Equations. Straight lines. Slope of line. General equation of a line. Slope-point equation. Equation of a line determined by two points. Circles and Intersections.</p>	x	x
2	2	<p>Linear system of equations with two unknowns. Gauss elimination method for linear systems. Regions defined in the plane by linear inequalities and system of inequalities with two unknowns. Solution regions. Geometric interpretation.</p>	x	x
3	3	<p>Polynomials and Rational expressions. Operations with polynomials. Special binomial products. Quadratic equations. Parabolas. Biquadratic equations. Roots of polynomials. Factoring polynomials. Synthetic division. Integer roots of polynomials. Ruffini's rule. Rational expressions. Operations.</p>	x	x

4	4	<p>Functions, properties and basic functions. Concept of a function. Domain and range of a function. The graph of a function. Inverse function. Composite function. Linear functions. Radical functions. Piecewise defined functions. Function transformation. Translations, dilations and symmetry. The absolute value of a function. MIDTERM 1.</p>	x	x
5	5	<p>Exponential, logarithmic and trigonometric functions. Exponential functions. Logarithm functions. Trigonometrically functions. Radical equations. Exponential and logarithm equations.</p>	x	x
6	6	<p>Limits of Functions. Continuity. Continuity. Types of discontinuities. Limits of a function at a point. Continuity. Finding limits of a function at a point. Infinite limits. Asymptotes. Vertical, horizontal and slant (oblique) asymptotes. Rational, exponential and logarithmic asymptotes.</p>	x	x
7	7	<p>Continuity. Types of discontinuity. Intermediate value Theorem.</p>	x	x
8	8	<p>Differentiation The derivative of a function. Tangent lines. Instantaneous rate of change. The derivative function.</p>	x	x
9	9	<p>Rules for differentiation. The chain rule. Implicit differentiation.</p>	x	x

10	10	Application of the derivative. Growth of a function. Extreme points of a function. Weierstrass' Theorem.	x	x
11	11	Application of the derivative. Growth of a function. Extreme points of a function. Weierstrass' Theorem. Optimization problems. Rolle's Theorem. Mean value Theorem. L'Hôpital's rule. MIDTERM 2.	x	x
12	12	Taylor polynomial. Concavity and convexity. Applications: Curve sketching of polynomial and rational functions.	x	x
13	13	Integration Antiderivatives. Finding antiderivatives. Basic integration rules. Definite integral. The fundamental Theorem of Calculus.	x	x
14	14	Techniques of integration: Integration by substitution. Integration by parts. Simple fractions. Applications: Area between two curves.	x	x