(h) Infinite limits and limits at infinity; Vertical and horizontal asymptotes, removable singularities.

(i) Definition of continuity at a point.

(j) Permanence of continuity; linear combinations, products, quotients, composition.

(k) Continuity on a domain.

(l) Left and right continuity; continuity on a closed and bounded interval.

(m) The Intermediate Value Theorem with examples.

2. The Derivative

(a) The geometric intuition of a tangent line.

(b) Differentiability at a point.

(c) Differentiability on an interval.

(d) Finding the equation of a tangent line to a graph at a point.

(e) Parametric equations and their derivatives.

(f) Implicitly defined curves and Implicit Differentiation.

(g) Rules of differentiation; linear rule, power rule (proof*), product rule (proof*), quotient rule, chain rule.

(h) Higher order derivatives.

(i) The Inverse Function Theorem; (**)

(j) Relation between derivatives of inverse function pairs.

(k) Derivatives of exponential, logarithm, inverse trig functions.

(l) Derivatives of hyperbolic functions. (*)

(m) Logarithmic differentiation.

(n) Rolle's Theorem and The Mean Value Theorem with examples. (*)

(o) Relative and absolute extrema. Fermat's theorem, critical numbers. First and second derivative tests. Concavity. Inflection points.

(p) The Extreme Value Theorem with examples.

3. Applications of Differentiation

(a) Indeterminate forms (l'Hopital's rule).

(b) Limit definition of e^a. (**)

(c) Curve sketching.

(d) Optimization.