LC Maths (H) Course 1

Differentiation Calculus

- ***Applying the Rules of Differentiation***: This includes using the product, quotient, and chain rule. Applying these rules to differentiate Trigonometric, Exponential, Logarithmic and Inverse Trigonometric Functions.

- Limits, Asymptotes & Continuity of Functions.

- Differentiation using first principles.

- ***Applications of Differentiation***: Turning Points, The Second Derivative Test, Maximum & Minimum Points, Increasing & Decreasing Functions.

- ***Differentiation Word Problems***: Maximum & Minimum Word Problems, Rates of Change & Related Rates of Change.

- Exam Questions from Section A & Section B of the Exam Papers on Differentiation.

LC Maths (H) Course 2

Probability and Statistics

- ***Statistics***: The Correlation Coefficient & Line of Best Fit. The Normal Distribution, Z Scores & Solving problems using the Normal Distribution Tables.

- ***Probability***: The Addition Rule, The Multiplication Rule, Independent Events, Mutually Exclusive Events, Conditional Probability, Expected Value, Bernoulli Trials & The Binomial Distribution, Difficult Word Problems on Probability.

- ***Inferential Statistics***: The Central Limit Theorem, Confidence Intervals & Hypothesis Testing using sample means, Proportions & P Values.

- Exam Questions from Section A & Section B of the Exam Papers on Probability & Statistics.

LC Maths (H) Course 3

Co Ordinate Geometry of the Line & Circle

- **_Co Ordinate Geometry of the Line_**_:_ The Area of a Triangle, Internal & External Division of a Line Segment, The Perpendicular Distance Formula, The Angle Between 2 Lines, Finding the Circumcentre, Orthocentre & Centroid of a Triangle using Co Ordinate Geometry.

- **_Co Ordinate Geometry of the Circle_**_:_ Finding the Centre & Radius of Circles, The Intersection of a Line & Circle, Tangents & Circles, More Difficult Problems in finding the Equation of a Circle when you are given certain restrictions.

- Exam Questions from Section A & Section B of the Exam Papers on Co Ordinate Geometry of the Line & Circle.

LC Maths (H) Course 4

Trigonometry

- The Sine Rule, Cosine Rule, Area of a Triangle & 3-Dimensional Problems.

- Solving Trigonometric Equations using CAST.

- The Graphs of Trigonometric Functions.

- Using the Formulae from The Log Tables to prove Trigonometric Identities.

- Exam Questions from Section A & Section B of the Exam Papers on Trigonometry.

LC Maths (H) Course 5

Functions, Indices & Logarithms

- ***Functions:*** Composite Functions, Completed Square Form, Inverse Functions, Injective Surjective & Bijective Functions.

- ***Indices:*** Solving Quadratic Equations Using Indices.

- ***Logarithms:*** Solving Log Equations, Writing Expressions a Single Logs,

- Using the Natural Log to get a Power Down, Log Word Problems.

Exam Questions from Section A & Section B of the Exam Papers on Functions, Indices & Logarithm.

LC Maths (H) Course 6

Financial Maths

- Lump Sum & Deprecation Questions.

- Annuity, Savings & Investment Questions.

- Amortisation Schedules & Using the Amortisation Formula.

- The Present Value Series.

- Problems Involving Bonds & Pensions.

- Deriving the Amortisation Formula.

- Exam Questions from Section A & Section B of the Exam Papers on Financial Maths.

LC Maths (H) Course 7

Paper 1

- Focus on Long Questions.

    o Algebra.

    o Differentiation.

    o Integration.

    o Sequences & Series.

Paper 2

- **Focus on Long Questions.**
    o Trigonometry.
    o Geometry.
    o Volumes & Areas.
    o Probability.
    o Statistics & Hypothesis Testing.

    **Techniques from Section A will be reviewed as session progresses.