

6th Maths (H) Course 1

Differentiation Calculus

Topics Covered:

- *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.

6th Maths (H) Course 2

Probability and Statistics

Topics Covered:

- *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.

6th Maths (H) Course 3

Co Ordinate Geometry of the Line & Circle

Topics Covered:

- *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.

6th Maths (H) Course 4

Trigonometry

Topics Covered:

- 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.

6th Maths (H) Course 5

Functions, Indices & Logarithms

Topics Covered:

- *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.

6th Maths (H) Course 6

Financial Maths

Topics Covered:

- Lump Sum & Depreciation 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.

6th Maths (H) Course 7

This is a new course in our Mathematics series. It is aimed at tackling the long questions from Section B from Papers 1 & 2. These two sections represent 300 out of the total 600 marks awarded.

Paper 1

- Focus on Long Questions.
 - Algebra.
 - Differentiation.
 - Integration.
 - Sequences & Series.

Paper 2

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

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