

Higher Mathematics Topic List

Unit 1 - Expressions and Functions

For help with any of these topics get in touch [here](#)

Logarithmic Functions

Graphs of Exponential & Logarithmic Functions

'e' and the Natural Logarithm

Rules of Logarithms

Exponential and Logarithmic Equations

Word Problems Involving Exponential and Logarithmic Functions

The Sin, Cos, & Tan Functions Overview

The CAST Method

Exact Values for Common Angles - 30, 45, 60 and 90

Exact Values for Multiples of 30, 45, and 60

Understanding Radians

Exact Values for Angles Given in Radians

The Addition Formulas

The Double-Angle Formulas

Proving Trigonometric Identities

The Wave Function

Graphs of Transformed Functions - General Rules

Graphs of Transformed Trigonometric Functions

Graphs of Quadratic Functions in Completed Square Form

The Domain & Range of a Function

Composite Functions

Inverse Functions

Unit Vectors

The Co-ordinates of the Division of a Line

Vector Pathways

Collinear Points

Scalar Product and Angle between Vectors

Unit 2 - Relationships and Calculus

For help with any of these topics get in touch [here](#)

Polynomials

Polynomial Factors

Factorising a Cubic by Synthetic Division

The Remainder Theorem for Polynomials

The Graph of a Cubic Function

Intersection of a Polynomial with the x-axis and y-axis

Determining Where a Straight Line and Polynomial Intersect

Using the Discriminant to Determine Unknown Coefficients in a Quadratic Equation

Solving Trigonometric Equations in Degrees

Solving Trigonometric Equations in Radians

Solving Trigonometric Equations involving Identities

Introduction to Differentiation

The Power Rule for Differentiation

The Gradient Function

The Equation of a Tangent to a Curve

The Chain Rule for Differentiation

Differentiating $\sin(ax)$ and $\cos(ax)$

Rates of Change

Determining Where a Function is Strictly Increasing or Decreasing

Determining the Stationary Points of a Function

Determining the Nature of Stationary Points of a Function

The Power Rule for Integration

The Chain Rule for Integration

Integrating $\sin(ax)$ and $\cos(ax)$

Solving Simple Differential Equations

Definite Integrals and the Fundamental Theorem of Calculus

Introduction to Areas under Curves

Unit 3 - Applications

For help with any of these topics get in touch [here](#)

Parallel and Perpendicular Lines

Collinearity Using Gradients

Gradients and Angles

Medians, Altitudes and Perpendicular Bisectors

Circles

The (Basic) Equation of a Circle

The General Equation of a Circle

The Equation of a Tangent to a Circle

Intersecting Circles

Lines Intersecting Circles

Introduction to Recurrence Relations

Determining a Recurrence Relation

Calculating a Term from a Recurrence Relation

The Limit of a Sequence

Finding the Limit of a Sequence

Maximum and Minimum Values on a Closed Interval

Determining Optimal Solutions (Optimisation)

Finding the Area Under a Curve

Finding the Area between Two Curves