



Advanced Higher Maths - Distance Learning Scheme of Work

(last update 08/02)

The exercises mentioned at the end of each video are in the attached
OneNote

Combinations/Binomials

Intro Factorials

Simplifying Using Factorials / Combinations

Exploring Pascal's Triangle

Expanding Brackets Binomial

General Term

Review of Binomial

Partial Fractions

Intro Partial Fractions/ Distinct Linear Factors

Repeated Linear Factors

Irreducible Quadratic Factor

Algebraic Long Division

Improper Rational Functions

Differentiation Block 1

The Chain Rule

The Product Rule

The Quotient Rule

Differentiating Exponentials

Differentiating Logarithms

Differentiating Trig Functions

Integration Part 1

Recap from Higher

Integrating Exponentials

Integrating $1/x$ and trig functions

Integration by substitution

Integration by substitution part 2

Area under a curve

Volume of Revolution

Functions

Curve Sketching Vertical Asymptotes

Curve Sketching Vertical and Non-Vertical Asymptotes

Curve Sketching with turning points

Modulus

Odd and Even Function

Critical Points

Matrices

IntroToMatrices

Operations on Matrices

Matrix Multiplication

Identity and Matrix Algebra

Det of a Matrix

Inverse Matrix

Transformation Matrix

Combined Matrix

Systems of Equations

Redundant and Inconsistent Matrices

Ill-Conditioning of Matrices

Sequence and Series

Arithmetic Sequence

Geometric Sequence

Sum to infinity

Sigma Notation

McLaurin Series

Integration Part 2

Integrating Inverses

Integration with Partial Fractions

Integration by parts

Integration Dummy Function

Integration by Parts Repeated

Integration by parts definitive integral

Cyclic Integration

Diff equation variable separable

Diff equation variable separable 2

Complex Numbers:

Operations with complex number

Operations 2

Argand Diagram and Polar form

Loci of a complex number

Fundamental theory of algebra

Multiplying and Dividing in Polar form

De Moivre's theory

Fractional Indices

Nth Roots of unity

Complex Numbers and Multiple angle

Vectors:

Ratio and Direction Vectors

Vector Product Geometrically

Vector Product Component Form

Scalar Triple Product

Cartesian Equation of a plane

Parametric Equation of a plane

Vector Equation of a line

Angle between two planes

Parametric Equation of A plane

Vector Equation of a Line

Angle between two planes

Angle between a line and a plane

Intersection between line and a plane

Intersection of 2 lines

Intersection of 2 planes

Differential Equations:

[Integrating Factor](#)

[Homogenous Second Order - General](#)

[Homogenous Second Order - Particular](#)

[Non Homogenous Second Order Part 1](#)

[Non Homogenous Second Order Part 2](#)

[Particular solution of Non-Homogenous](#)

[Variable separable in context](#)