Maths

Spring Term

Exponentials and Logarithms – Recognise the difference between the graphs and solve equations using logarithms.
Differentiation – Differentiate polynomials from first principles and find turning points of functions.
Integration – Integrate indefinite and definite functions.
Vectors – Use vectors in 2D and 3D, calculate magnitude and direction of vectors.

Students in the Autumn Term will learn the following skills
- **Proof** – Developing the knowledge of algebraic arguments in proof by counter example and deduction.
- **Algebra and Functions –** Developing GCSE skills of rationalising surds in order to solve quadratic simultaneously equations. Solve linear and quadratic inequalities as well as transform graphs.
- **Coordinate Geometry –** Finding equations of tangents and normals. Also, finding equations of circles and key values.
- **Sequences and Series** – Solving arithmetic series problems and understanding the principles of binomial expansion.
- **Trigonometry –** Solving angle formulae and equation problems involving all types of Triangles.

Summer Term
- **Statistical Sampling** – Name the types of sampling and benefits/disadvantages of each type.
- **Probability** – Solve probability problems using the laws for conditional probability using Venn diagrams or other models.
- **Data Presentation and interpretation** (including large data sets) – Draw and interpret box plots, histograms and cumulative frequencies.
- **Forces and Newtons** - Using the three laws of forces to solve problems and model scenarios presented.
  Kinematics – Understand SUVAT equations and read and interpret velocity graphs.

Year 13 A-Level

A-Level Maths

Autumn Term
Pure Proof – Building ability to use Algebraic arguments to encompass proof by exhaustion and induction Numerical **Methods** – Use Newton-Raphson Method as a method of solving equations Coordinate Geometry – Develop problem solving modelling AS Level problems
Sequences and Series – Use geometric series rules and calculate sum of series and to infinity
Trigonometry – Differentiate and Integrate trigonometric functions.
Differentiation – Differentiate all types of functions and use chain, product and quotient rule for functions. Furthermore and calculate when differentiating implicit functions. Integration – Develop understanding of Integration to include integrate by parts and substitution.

Spring 1
Applied Statistical Distributions – Can recognise the difference between discrete, continuous distributions. Furthermore demonstrate that you can calculate with binomial and normal distribution.
Probability – Develop and apply knowledge of year 12 to handle all types of events including independent, mutually exclusive and combined events
Demonstrate the ability to **perform a Statistical Hypothesis Test** and arrive at a sensible conclusion
Moments – Use mechanical knowledge from the course to calculate in modelled scenarios.

- **Exam Therapy:** Students will use their most recent assessments to have bespoke lessons to target gaps in their knowledge and ensure they are ready for exams.

Students will sit three papers
- A-Level Paper 1: Pure
- A-Level Paper 2: Pure and Mechanics
- A-Level Paper 3: Pure and Statistics

A-Level Exams

FORTIS Academy