Advanced Mathematics Support Programme®

Year 13 Regular Problem Solving Classes

Derby

18th September 2019

Overview

A series of maths problem solving classes designed to develop students' problem solving skills so they have the confidence to apply for universities that include an admissions test as part of their offer.

These regular classes offer students the opportunity to develop their problem-solving skills by trying out challenging problems that require deep mathematical thinking, and so help them meet the challenges they may face in embarking on a maths-rich university course or career. The problems are fun and rewarding and attending the sessions will enrich a student's mathematical experience.

Students will look at problems from a range of sources including Sixth Term Examination Papers (STEP) used by Cambridge and Warwick Universities and the Mathematics Admissions Test (MAT) used by Oxford University and Imperial College, London.

Aims

- To develop confidence in dealing with maths problems
- To develop students' resilience when attempting maths problems
- To provide information about the problem solving skills required in university admissions tests
- To give students the opportunity to attempt problems both in groups and on their own
- To give students the opportunity to think about how solutions to problems are presented
- To provide students with the opportunity to explore areas of maths not in the standard curriculum
- To provide students with the opportunity to study questions from the STEP and the MAT examinations.

Who will benefit from attending?

The classes are suitable for any A level Mathematics student with an enquiring mind who wishes to develop their problem solving ability at A level and beyond.

They are particularly suitable for those students who are required to sit an admissions test as part of a university offer.

Content

Students attending the classes will encounter problems covering a variety of topics. These include:

- Working with integers
- Reasoning and logic
- Sequences and series
- Induction
- Curve sketching and identification
- Coordinate geometry
- Vectors
- Trigonometry
- Complex numbers
- Integration
- Differential equations

Materials and Equipment

Students will not require any special equipment for the classes although a smartphone with the GeoGebra or Desmos apps may be useful.

Study Schedule

Week 1 Integers

Week 2 Implication and related ideas

Week 3 Extensions to the binomial theorem

Week 4 Induction

Week 5 Sequences and series

Week 6 Curve sketching

Week 7 Coordinate geometry

Week 8 Vectors

Week 9 Trigonometry

Week 10 Complex numbers

Week 11 Integral calculus

Week 12 Differential equations

Week 13 Elementary probability

Week 14 Probability distributions

Week 15 Mechanics

Week 16 Mechanics

Week 17 Hyperbolic functions

Week 18 Polar coordinates and parametric equations

Key Facts

Event ref:	#6058
Audience:	Students
Target year:	Year 13
Curriculum focus:	University admissions tests, A level Mathematics, A level Further Mathematics
Mathematical focus:	Pure, Problem solving
Event format:	Student course
Event length:	20 hours
Region:	East Midlands
Venue:	University of Derby, DE22 3AW
Date:	Wed 18th Sep 2019
Course times:	16:00 - 18:00

Registration

For more information, or to register for this event, please visit https://amsp.org.uk/events/details/6058