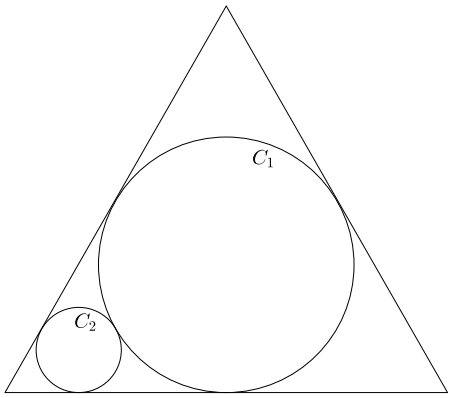
UNIVERSITY OF LEICESTER

amsp

Year 12 Advanced mathematics problems course 2022-2023.

Sample problem. The diagram below shows a circle C_1 inscribed in an equilateral triangle of side 6 units. C_2 is a circle that touches C_1 and two sides of the triangle as shown. Given that the base of the triangle is on the x axis with the origin at the lower left vertex. Find the coordinates of the centres and equations of C_1 and C_2.



Course aims and description

The aims of the year 12 advanced problems course are (1) The development of students' mathematical thinking.(2) Increasing students' confidence in solving unstructured problems. (3) Improved preparation for the MAT, AEA and STEP examinations.
The problems in the **calculator free** course are based year 12 pure mathematics topics but are unstructured and challenging.
This course will be offered both as **face-to-face** and **distance/online** formats. The latter is intended primarily for students who are not **local** to Leicester.
* The face-to-face format consists of twelve year 13 problems classes each of 1.5 hours duration, in university venues, between September 2022 and April 2023.
* The distance/online format involves the same materials as the face-to-face option but with the **addition** of slides to guide students through the problems. Students taking this option will need to complete a small assignment per problem sheet to signify attendance.

The course is free for all year 12 students. Students should email **mathsor@le.ac.uk** to apply for a place on the course.
* Students who attend regularly will obtain a School of Computing and Mathematical Sciences Certificate of Participation. Students who attend regularly and submit the course assignment will obtain a School of Computing and Mathematical Sciences Certificate of Achievement.
The topics and frequency for the both face-to-face and distance/online options are given in the table below. The exact dates (and timings for the face-to-face classes) will be announced in late August.

The course schedule

Class topic:	Date/times
Algebra 1	Oct tba
Coordinate Geometry 1	Nov tba
Series 1	Nov tba
Calculus 1	Dec tba
Algebra 2	Jan tba
Coordinate Geometry 2	Feb tba
Series 2	Feb tba
Trigonometry	March tba
Logarithms	March tba
Calculus 2	April tba