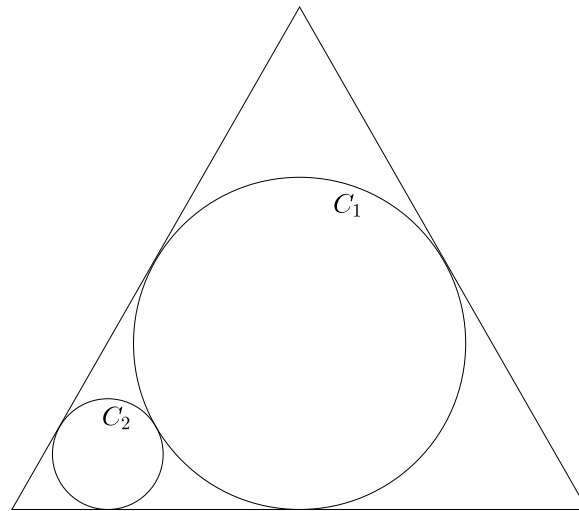


Year 12 Advanced mathematics problems course 2021.

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 School of Mathematics and Actuarial Science/AMSP 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 course are based year 12 pure mathematics topics but are unstructured and challenging. Students on the course are expected to do preparatory reading prior to the problems classes and to solve problems in class on whiteboards under the supervision of the class tutor.

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 on the course will be emailed the class venues, all in the main university campus on University Road, Leicester, in good time.

Students who attend regularly will obtain a School of Mathematics and Actuarial Science Certificate of Participation. Students who attend regularly and submit the course assignment will obtain a School of Mathematics and Actuarial Science Certificate of Achievement.

The course schedule

Class:	Date
Algebra 1	Mon Jan 18: 4.30 to 6 pm
Coordinate Geometry 1	Mon Feb 1: 4.30 to 6 pm
Series 1	Mon Feb 15: 4.30 to 6 pm
Calculus 1	Mon Mar 1: 4.30 to 6 pm
Algebra 2	Mon Mar 15: 4.30 to 6 pm
Coordinate Geometry 2	Mon Mar 29 :4.30 to 6 pm
Series 2	Mon Apr 19: 4.30 to 6 pm
Trigonometry	Mon Apr 26: 4.30 to 6 pm