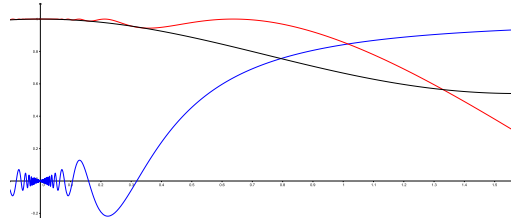


Year 13 Advanced Mathematics Problem Solving Course 2023/2024.

The graphs of $y = x \sin\left(\frac{1}{x}\right)$, $y = \cos\left(x \cos\left(\frac{1}{x}\right)\right)$ and $y = \cos(\sin(x))$ are shown below. Which is which?



Course aims and description

This **free** course will be offered primarily in a **face-to-face** course format. In exceptional circumstances applicants will be accepted in the **distance** format. The latter is intended primarily for students who are not **local** to Leicester.

*The course is **calculator free** and is suitable for students who currently intend to either pursue an undergraduate degree in a mathematical subject, sit one of the STEP examinations in summer 2024 or who just have a passion for mathematical problem solving.

* The face-to-face format consists of twelve classes each of 1.5 hours duration (**4.30 to 6 pm on Mondays**), in university venues between September 2023 and March 2024. The maximum intake is 25 students.

* The distance format involves the same materials and schedule as the face-to-face option but with the **addition** of slides to guide students through the problems. Students on the distance course will need to complete a small assignment in each of the 12 sessions to signify attendance.

If, in January 2024, students on the course have a university offer requiring STEP grades, then we can offer STEP support.

To apply for places in the course or for further enquiries contact: **mathsor@le.ac.uk**

The topics for this course are given in the table below.

The course schedule

<u>Class topic(s)</u>	<u>Date</u>
Algebra 1	Sept 11
Trigonometry	Sept 18
Differentiation	Oct 2
Coordinate Geometry	Nov 13
Algebra 2	Nov 27
Inequalities	Dec 11
Sequences and Series	Jan 8
Exponentials and Logarithms	Jan 15
Curve Sketching	Jan 29
Proof	Feb 12
Vectors	March 4
Integration	March 18
Reserve class	April 29