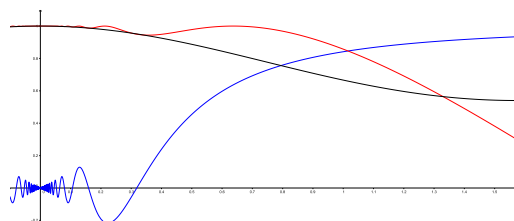


## Year 13 Advanced mathematics problems/STEP course 2021.

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 course is in two parts:

**Part 1** consists of seven online year 13 problems classes each of 1.5 hours duration scheduled on Saturdays between January and April. The course is suitable for students who intend at the present time to either pursue an undergraduate degree in a mathematical subject, sit one of the STEP examinations in summer 2021 or who just have a passion for mathematical problem solving.

**Part 2** consists of ten online STEP preparation classes of two hours duration scheduled between April and May 2021. The course is suitable for students who have an offer to study undergraduate mathematics which requires STEP II or III grades.

To apply for places on either part of the course or for further enquiries contact: [mathsor@le.ac.uk](mailto:mathsor@le.ac.uk)  
The topics and timings for the classes are given in the table below.

### The course schedule

Class topic(s)	Date
Algebra	Mon Jan 11 : 4.30 to 6 pm
Trigonometry	Mon Jan 25: 4.30 to 6 pm
Calculus	Mon Feb 8: 4.30 to 6 pm
Curve Sketching	Mon Feb 22: 4.30 to 6 pm
Proof	Mon Mar 8: 4.30 to 6 pm
Inequalities	Mon Mar 22: 4.30 to 6 pm
Sequences and Series	Mon Apr 5: 4.30 to 6 pm
STEP Proof	Mon Apr 12: 4.30 to 6.30 pm
STEP Coordinate Geometry	Sat Apr 17: 10 am to 12 noon
STEP Inequalities	Mon Apr 19: 4.30 to 6.30 pm
STEP Calculus	Sat Apr 24: 10 am to 12 noon
STEP Vectors	Mon Apr 26: 4.30 to 6.30 pm
STEP Trigonometry	Tue May 4: 4.30 to 6.30 pm
STEP Numbers and Series	Mon May 10: 4.30 to 6.30 pm
STEP Complex Numbers	Sat May 15: 10 am to 12 noon
STEP Matrices	Mon May 17: 4.30 to 6.30 pm
STEP Hyperbolic Functions	Sat May 22: 10 am to 12 noon
STEP D.E.'s and Polar Coordinates	Mon May 24: 4.30 to 6.30 pm