

# Planarity Algorithm – Q1 [7 marks](18/6/21)

## Exam Boards

OCR : -

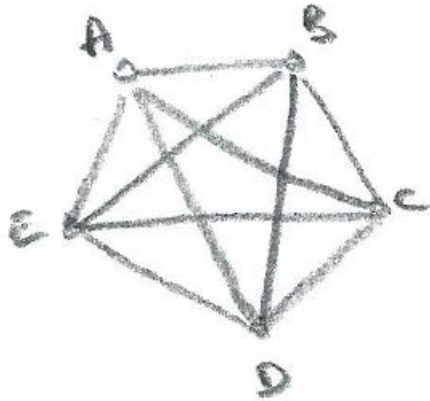
MEI: -

AQA: -

Edx: D1 (Year 1)

Use the Planarity algorithm to determine whether or not  $K_5$  is planar. [7 marks]

## Solution



ABCDE is a Hamiltonian cycle [1 mark]

The interior arcs are AC, AD, BD, BE & CE [1 mark]

Give AC the label I [to indicate that it is to be an interior arc]

BD & BE are the arcs that cross AC, and they don't cross each other, and so can be labelled O [2 marks]

AD & CE each cross one (or more) of BD & BE, but cross each other, and so can't be labelled I

Hence the graph is non-planar [3 marks]