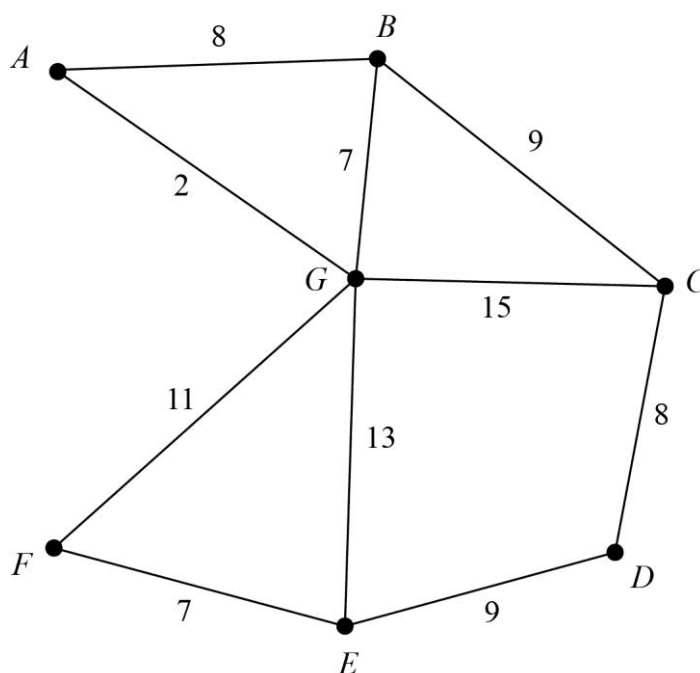


Decision Mathematics 1 Unit Test 3: Algorithms on graphs II

- 1 The diagram represents a network of pipes. Each pipe needs to be cleaned. The only access to the pipes is at B .



- a** Use the Route Inspection Algorithm to find which paths, if any, need to be traversed twice. State the length and a possible route. **(6 marks)**

It is decided to make another access point at E . The pipes can now be entered at one access point and exited at the other.

- b** Determine the changes to the route from your answer in **a** if the route is to be minimised.

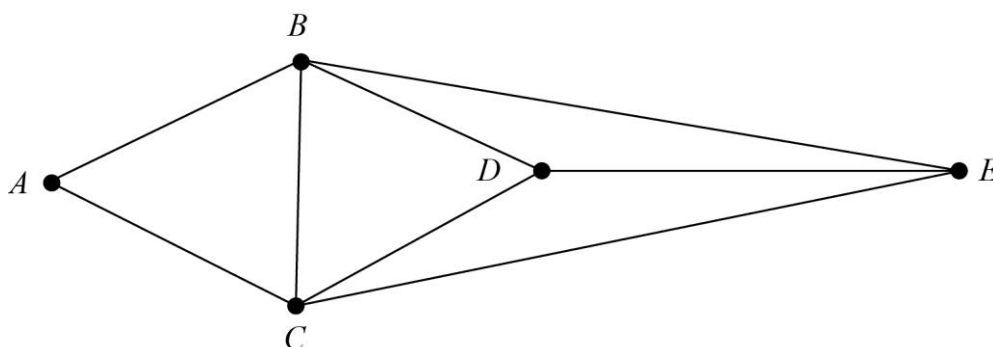
Explain your reasoning.

How much shorter is the length of the new route? **(3 marks)**

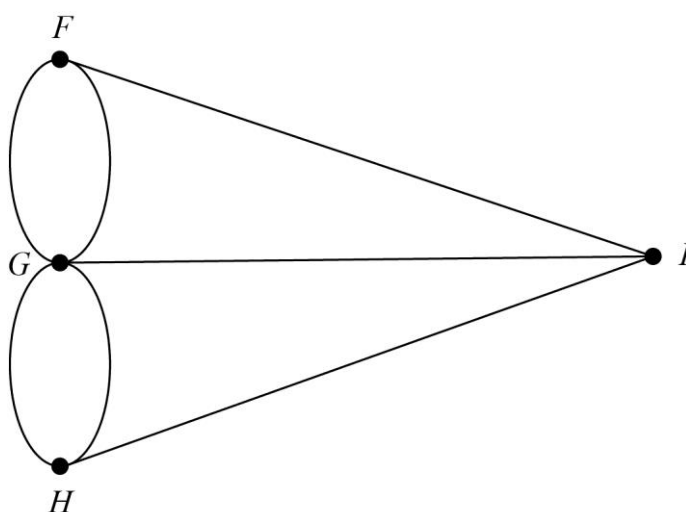
- 2 a** Use the valency of each vertex to determine if the following networks are traversable.

Explain your reasoning.

i



ii



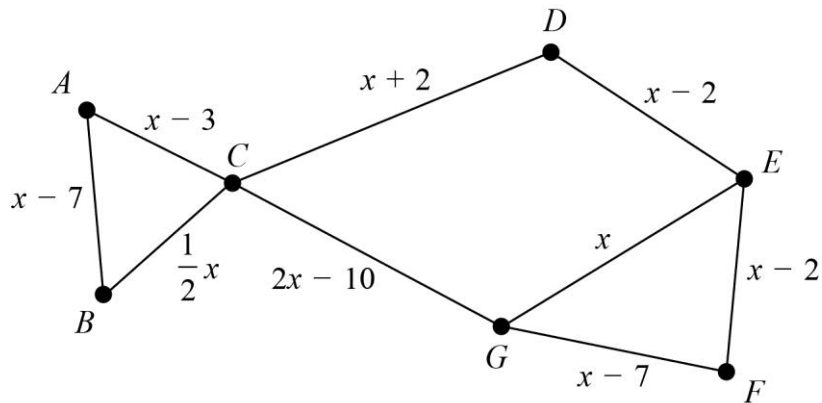
(2 marks)

- b** If the network in **a** is traversable, state a possible route.

(1 mark)

Decision Mathematics 1 Unit Test 3: Algorithms on graphs II

- 3 a Explain why it is impossible to draw a network with exactly three odd vertices. (2 marks)



The Route Inspection Algorithm is used on the above network. The length of the route is found to be 100.

- b Determine the value of x . You must show all your working clearly. (4 marks)