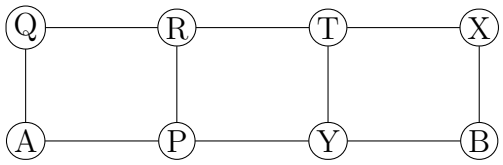
CS 173, Spring 2015
Examlet 6, Part B

NETID:

FIRST: | **LAST:**

Discussion: Monday 9 10 11 12 1 2 3 4 5



1. (8 points) How cycle subgraphs (i.e. subgraphs isomorphic to C_n for some n) does the above graph contain? Count two cycles as the same if they have the same set of nodes; don't worry about (for example) which node is the start/end node. Briefly justify and/or show work.

2. (3 points) What is the diameter of this graph?

3. (4 points) Is this graph bipartite? Briefly justify your answer.

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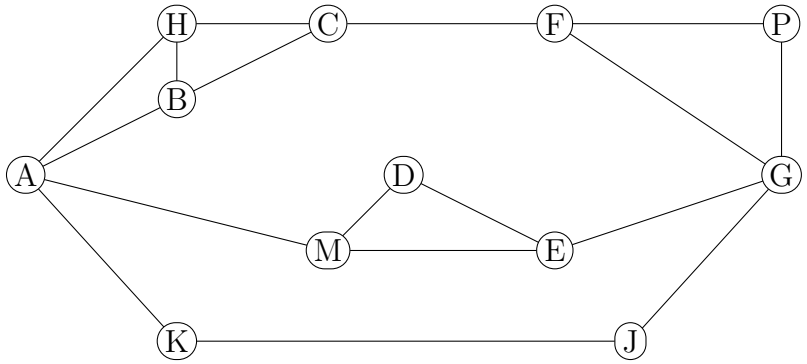

1. (8 points) Recall that a path never re-uses a node. How many paths are there from A to G in the above graph? Explain or show work.

2. (3 points) Is the above graph acyclic? Briefly explain why or why not.

3. (4 points) Complete this statement of the Handshaking Theorem.

   For any graph G with set of nodes V and set of edges E, ...

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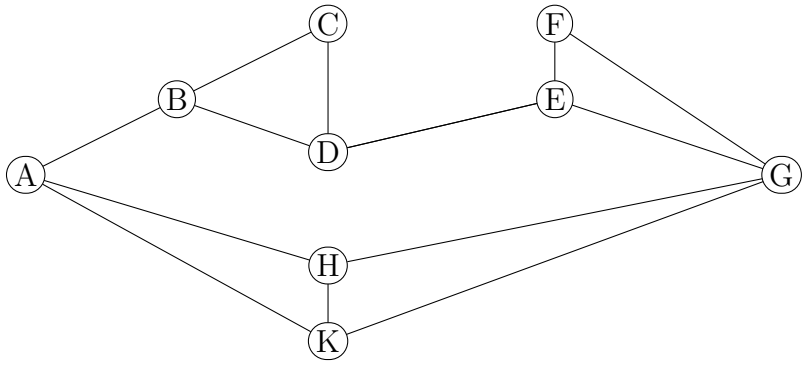

1. (8 points) Recall that a path never re-uses a node. How many paths are there from A to G in the above graph? Explain or show work.

2. (3 points) What is the diameter of the above graph?

3. (4 points) What's the difference between an open walk and a closed walk?

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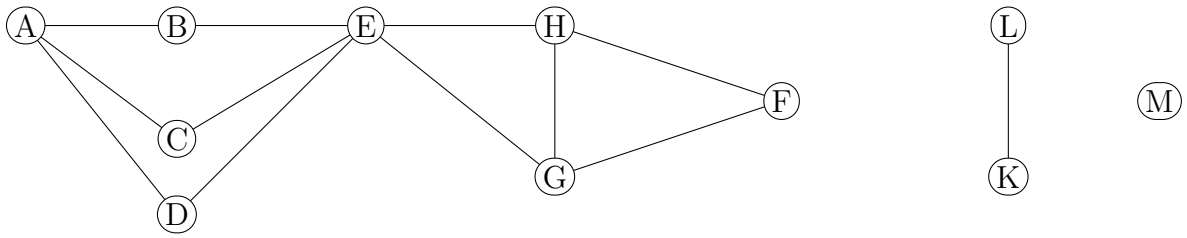

1. (3 points) Graph X (above) contains 11 nodes. How many connected components does X have?

2. (8 points) Recall that a path never re-uses a node. How many paths are there from A to F in the above graph? Explain or show work.

3. (4 points) What is the difference between a cycle and a closed walk?

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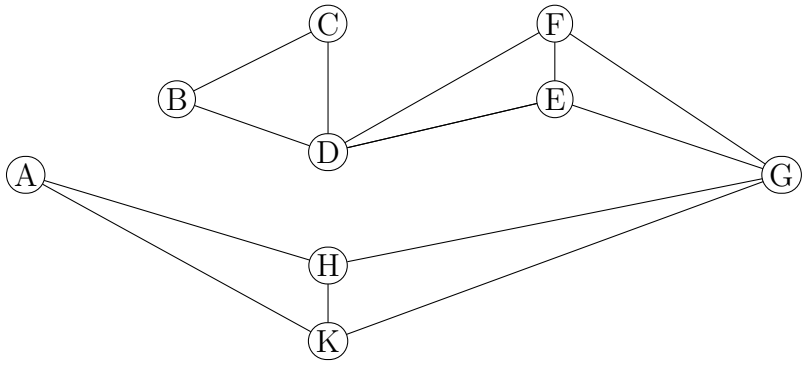

1. (8 points) Recall that a path never re-uses a node. How many paths are there from A to B in the above graph? Explain or show work.

2. (3 points) Does the above graph have a cut edge? Briefly explain why or why not.

3. (4 points) Does this graph have an Euler circuit? Briefly justify your answer.

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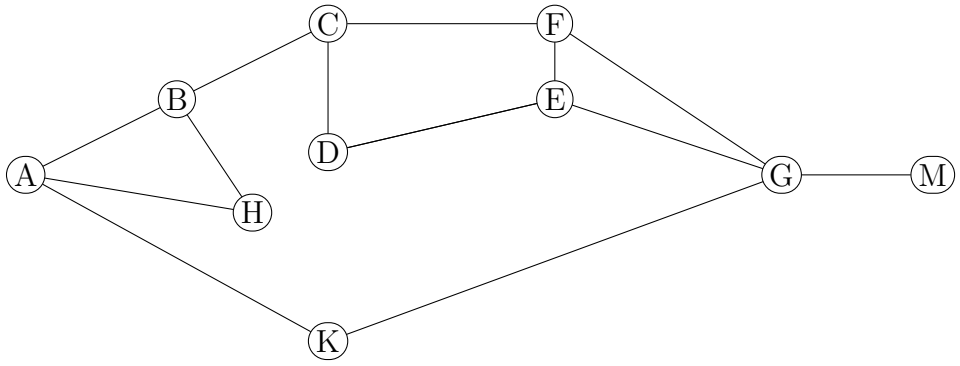

1. (8 points) Recall that a path never re-uses a node. How many paths are there from A to G in the above graph? Explain or show work.

2. (3 points) What is the diameter of the above graph?

3. (4 points) In the above graph, is there a cycle that contains both node A and node F?