

**CS 173, Fall 2015**  
**Examlet 6, Part A**

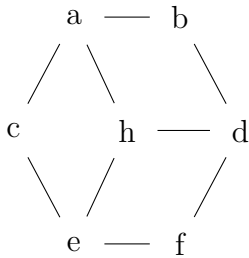
**NETID:**

**FIRST:**

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**Discussion: Thursday 2 3 4 5 Friday 9 10 11 12 1 2**

1. (10 points) How many isomorphisms are there from  $G$  (below) to itself? Justify your answer and/or show your work clearly .



2. (5 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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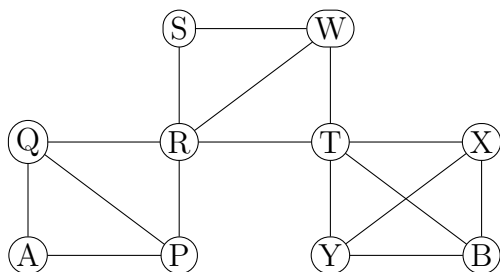
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1. (10 points) How many isomorphisms are there from  $G$  (below) to itself? Justify your answer and/or show your work clearly .



2. (5 points) The complete graph  $K_7$  contains 7 vertices. How many edges does it have?

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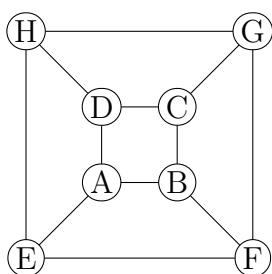
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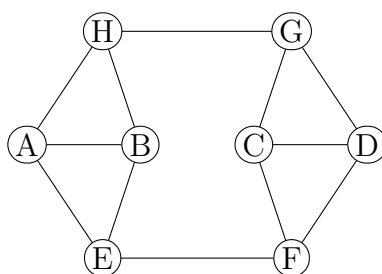
Discussion: Thursday 2 3 4 5 Friday 9 10 11 12 1 2

1. (10 points) Are the graphs X and Y (below) isomorphic? Justify your answer.

Graph X



Graph Y



2. (5 points) Is the cycle graph  $C_4$  a subgraph of graph  $K_{3,3}$ ? Briefly justify your answer.

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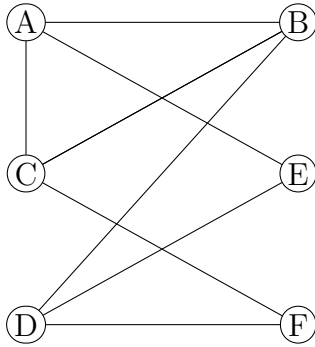
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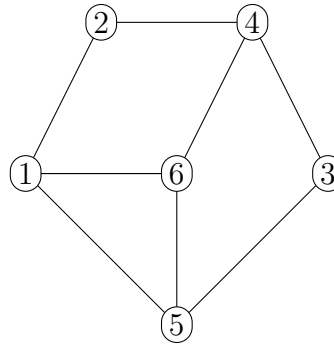
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1. (10 points) Are graphs X and Y (below) isomorphic? Justify your answer.

Graph X



Graph Y



2. (5 points) What is the difference between a cycle and a closed walk?

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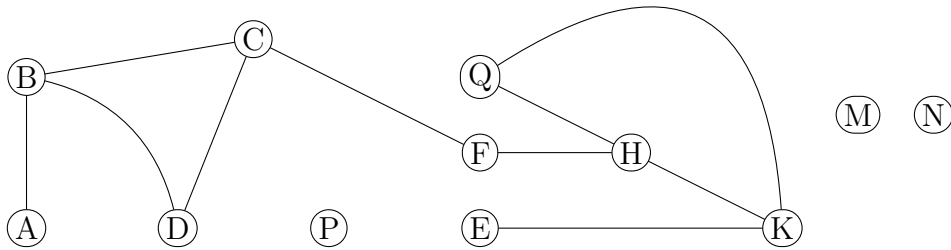
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1. (10 points) How many isomorphisms are there from  $G$  (below) to itself? Justify your answer and/or show your work clearly .



2. (5 points) Is the graph  $C_7$  bipartite? Briefly justify your answer.

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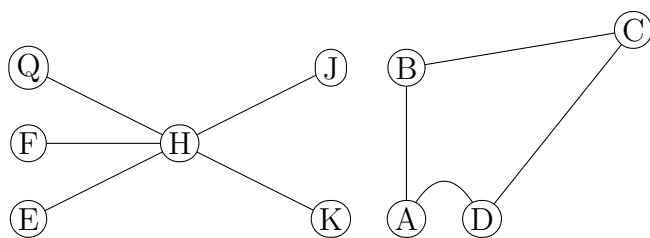
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1. (10 points) How many isomorphisms are there from  $G$  (below) to itself? Justify your answer and/or show your work clearly .



2. (5 points) Does the complete graph  $K_7$  have an Euler circuit?