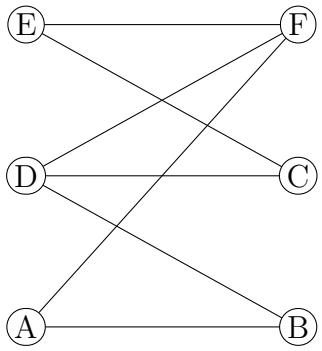
Name:_____

NetID:_____ **Lecture: A B**

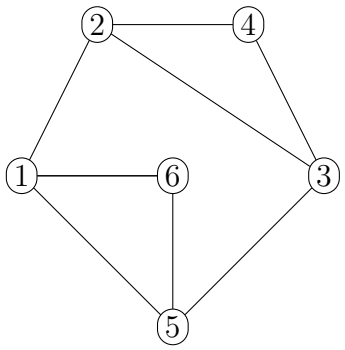
Discussion: Thursday Friday 10 11 12 1 2 3 4 5 6

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

Graph X



Graph Y



2. (5 points) Show three graphs, each with exactly four nodes and three edges, none of which are isomorphic.

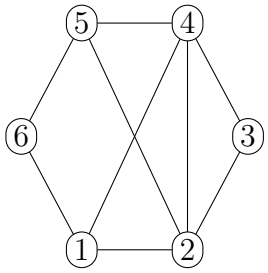
Name:_____

NetID:_____ **Lecture: A B**

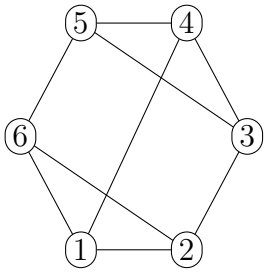
Discussion: Thursday Friday 10 11 12 1 2 3 4 5 6

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

Graph X



Graph Y



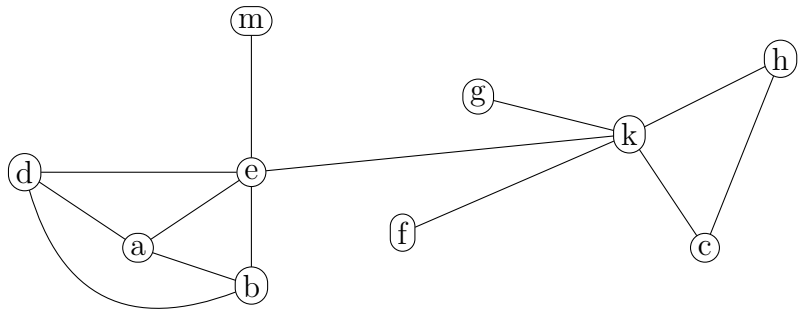
2. (5 points) The degree sequence of a graph is the list of the degrees of all the nodes in the graph, arranged in numerical order, largest to smallest. Is it possible to construct a graph with degree sequence: 5, 3, 2, 2, 2, 0? Show how or briefly explain why this isn't possible.

Name:_____

NetID:_____ **Lecture: A B**

Discussion: Thursday Friday 10 11 12 1 2 3 4 5 6

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 degree sequence of a graph is the list of the degrees of all the nodes in the graph, arranged in numerical order, largest to smallest. Is it possible to construct a graph with degree sequence: 5, 3, 3, 2, 2, 1? Show how or briefly explain why this isn't possible.

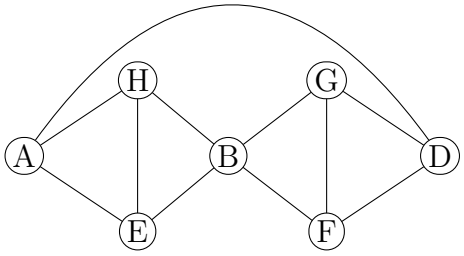
Name:_____

NetID:_____ **Lecture: A B**

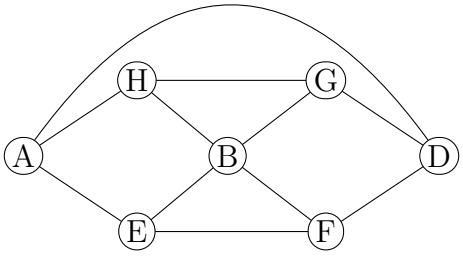
Discussion: Thursday Friday 10 11 12 1 2 3 4 5 6

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?

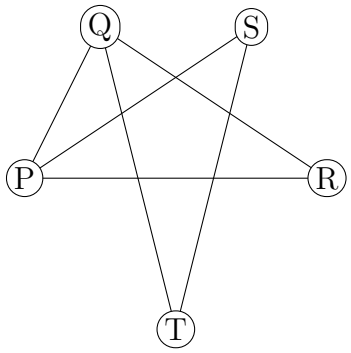
Name:_____

NetID:_____ **Lecture: A B**

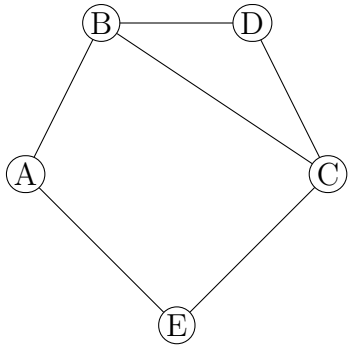
Discussion: Thursday Friday 10 11 12 1 2 3 4 5 6

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

Graph X



Graph Y



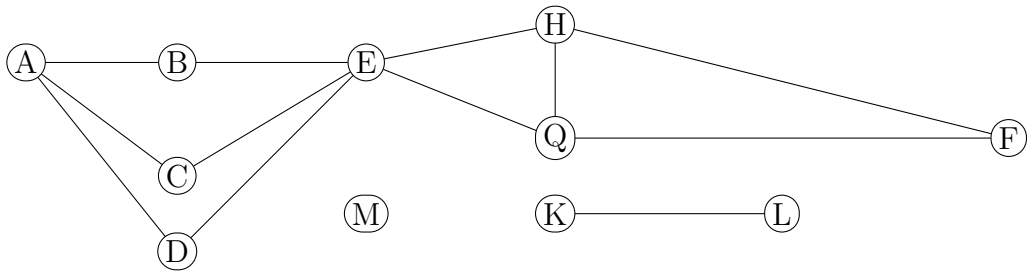
2. (5 points) If G is a graph, its complement G' has the same nodes as G but G' has an edge between nodes x and y if and only G does not have an edge between x and y. Give a succinct high-level description of the complement of $K_{2,3}$. Briefly justify or show work.

Name:_____

NetID:_____ **Lecture: A B**

Discussion: Thursday Friday 10 11 12 1 2 3 4 5 6

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) What is the diameter of C_n?