

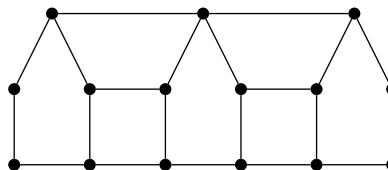
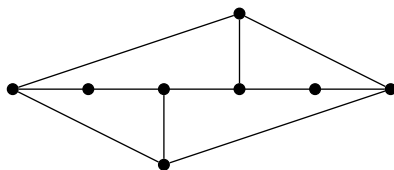
HOMEWORK 2: §1.1,1.2**DUE FEBRUARY 1**

Name: _____

- Refer to the syllabus regarding allowed collaboration on this homework assignment.
- Refer to other homework instructions and suggestions posted in Blackboard.
- All answers must be fully justified.
- Your homework should be neatly written on additional paper; you may attach this cover page if you would like to keep the questions attached to the answers.

Turn in four of the following six problems to be graded.

- (1) 1.1.17. Determine all isomorphism classes of simple 4-regular 7-vertex graphs. (*See also HW1#3.*)
- (2) 1.2.7. Prove that a bipartite graph has a unique bipartition (except for interchanging the two partite sets) if and only if it is connected.
- (3) 1.2.28ish. In each graph below, find a bipartite subgraph with the maximum number of edges. Prove that this is the maximum, and determine whether yours is the only bipartite subgraph with this many edges.



- (4) 1.2.29. Let G be a connected simple graph not having P_4 or C_3 as an induced subgraph. Prove that G is a complete bipartite graph.
- (5) 1.2.39. Let G be a loopless graph with $\delta(G) \geq 3$. Prove that G contains an even cycle.
- (6) 1.2.40. Let P and Q be paths of maximum length in a connected graph G . Prove that P and Q have a common vertex.