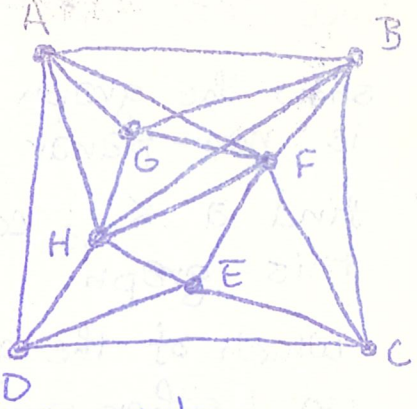
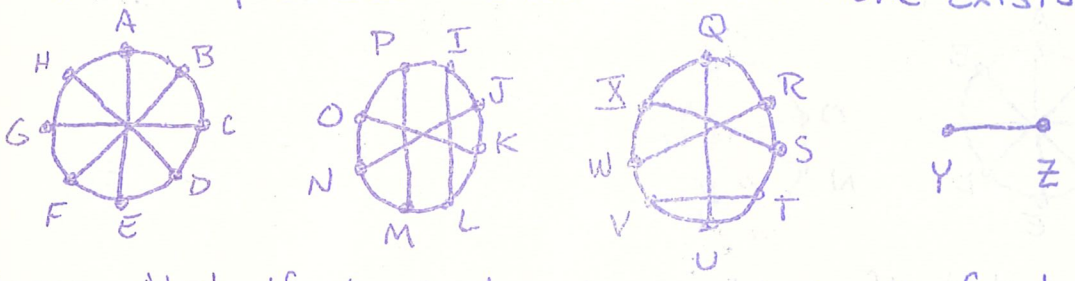
Practice Test For Chapter 7



1. Show the graph to the right is non-planar (i.e. prove it)
2. Find a $K_{3,3}$ configuration in this graph
3. Which of the graphs below are iso (either produce the iso or show none exists



4. Prove that if V = # of vertices and E = # of edges in a connected planar graph, then $3V - 6 \geq E$
5. Prove that in a multi-graph the number of vertices of odd degree is even.
6. Is there a graph with 11-vertices of degree 3 and 1 of degree 5? (If ~~sho~~ so draw it, otherwise prove none exists)
7. If a graph has 100 edges, how many vertices must it have? If a graph has 100 vertices and is connected what are the smallest and largest number of edges it can have?
8. A simple circuit is a circuit in which a vertex is visited at most once, whereas a (general) circuit may repeat vertices but not edges
   a. prove or give a counterexample: if vertices x & y are on a general circuit, then they are on a simple circuit.
   b. Prove each general circuit has a subset which is a simple circuit.
9. A connected planar graph has 12 vertices each of degree 5 how many edges and regions does it have?
10. Draw all non-isomorphic graphs with 6 vertices exactly two of degree one, two of degree 3 and the rest degree two.