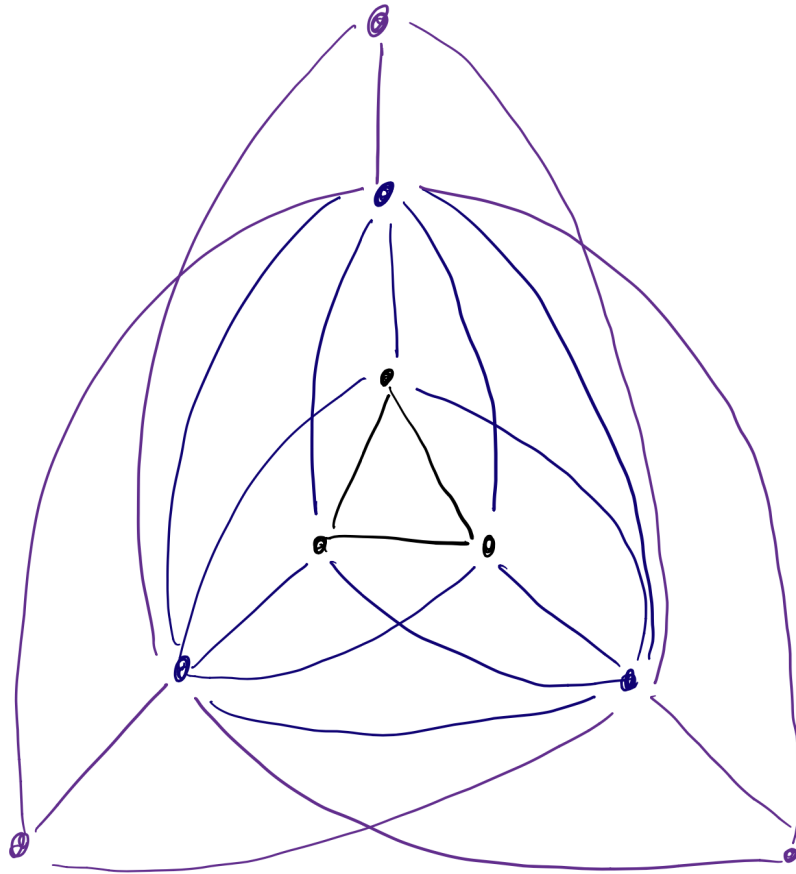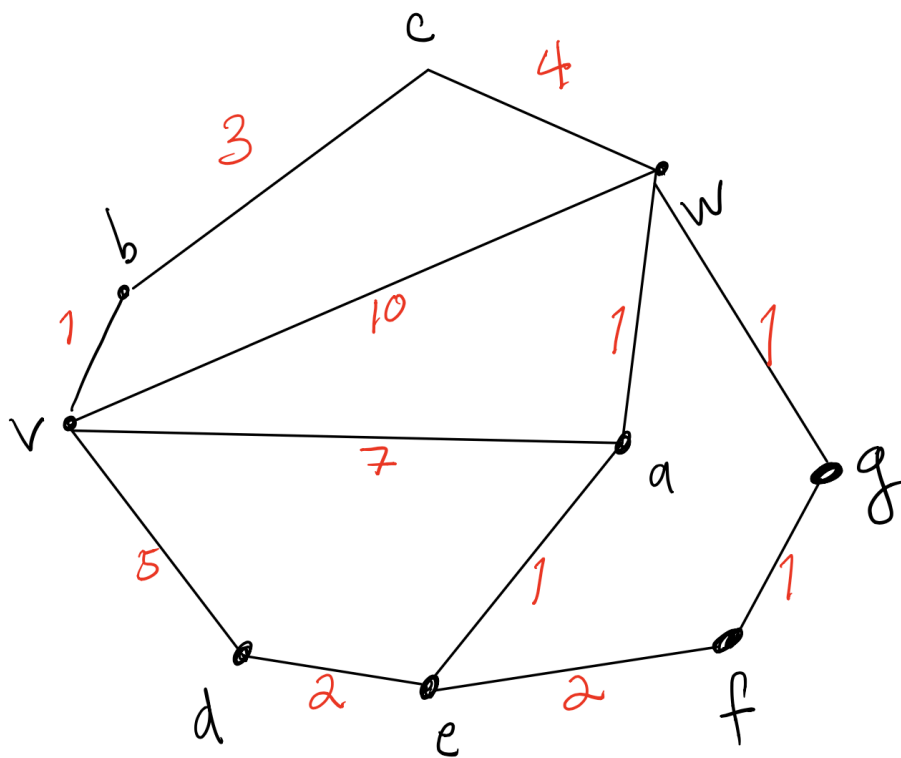# Graph Theory, Homework 2

Due Thursday, February 13

1. Show that the following graph has a Hamiltonian cycle, or explain why it does not:

2. Describe the assignments of best estimates for distances $b(v)$ after Dijkstra's algorithm has been run in order to find a shortest path from v to w in the following graph:

Hints for problem 1:

- If C is a cycle graph, and T is a subset of the vertices of C, we showed that the number of components of $C - T$ is at most $\#T$.
- If $H \subset G$ is a spanning subgraph of G, we showed that the number of components of G cannot be greater than the number of components of H.
- Recall that a graph G is Hamiltonian if and only if there is a spanning subgraph which is a cycle.
- There is no Hamiltonian cycle. But why not?