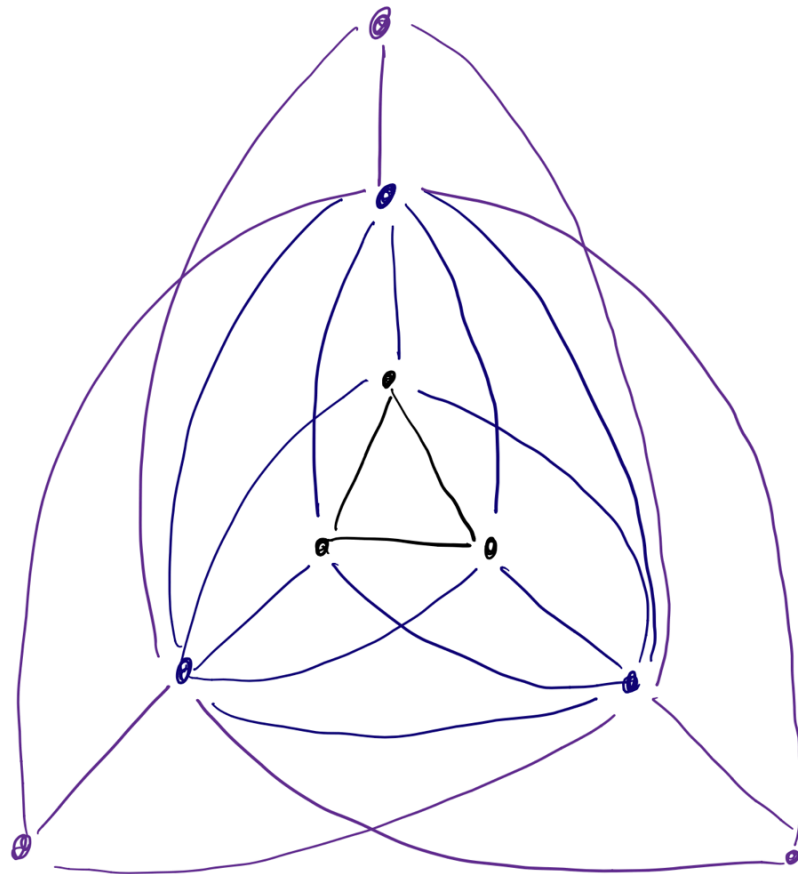


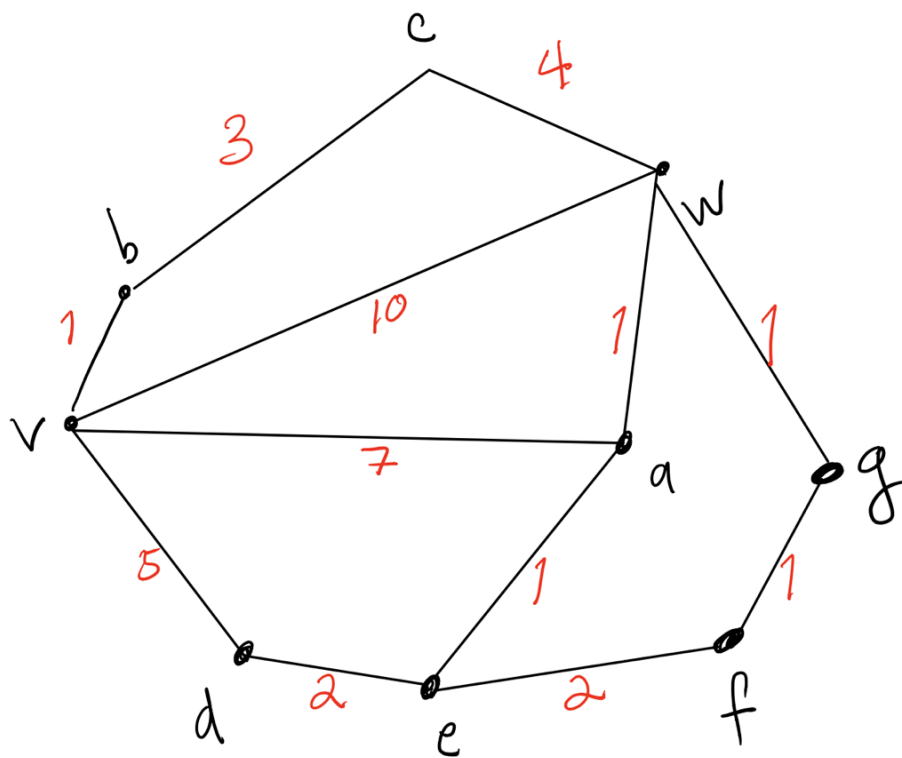
## Graph Theory, Homework 2

**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:




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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.