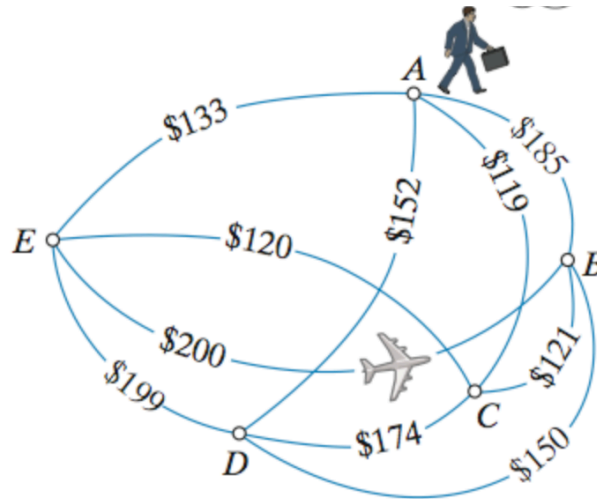


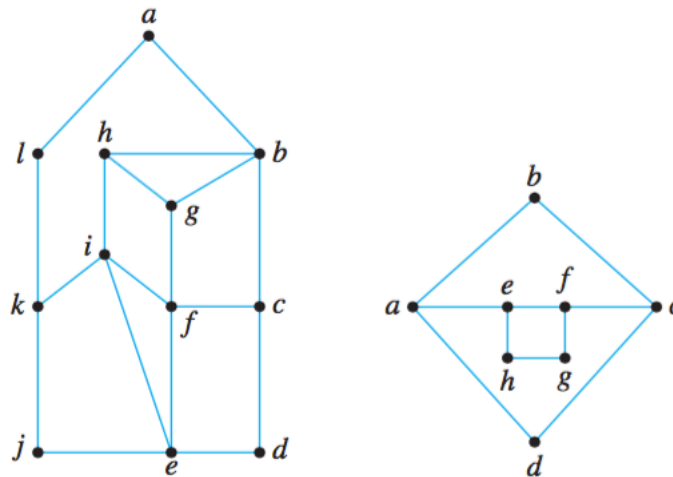
Homework 13: Graph Theory II

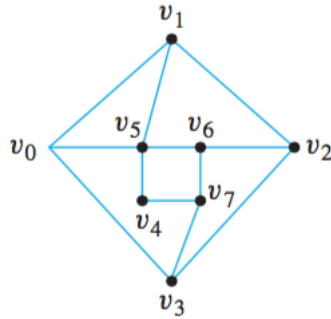
1. A traveling salesman is pondering his upcoming sales trip. He wants to tour five cities: A, B, C, D and E. The one-way airfares between two cities are shown on the graph.



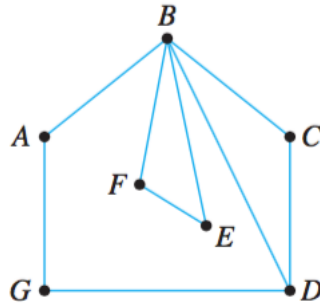
Solve the traveling salesman problem by listing all Hamiltonian paths and choosing the best.

2. Find Hamiltonian circuit for each of the graph and Euler trail if there exist.





3. Prove that graph don't have Hamiltonian cycle:



4. Give two examples of graphs that have circuits that are both Euler circuits and Hamiltonian circuits. (not presented in this homework)
5. Give two examples of graphs that have Euler circuits and Hamiltonian circuits that are not the same. (not presented in this homework)
6. For what values of n does the complete graph K_n with n vertices have (a) an Euler circuit? (b) a Hamiltonian circuit? Justify your answers.
7. Prove that every graph with $n \geq 3$ vertices and minimum degree at least $n/2$ has a Hamiltonian cycle
8. The complete bipartite graph $K_{m,n}$ is defined by taking two disjoint sets, V_1 of size m , and V_2 of size n , and putting an edge between $u[i] \in V_1$ and $v[j] \in V_2$ $\{u[i], v[j]\} \in E \forall i, j$
 - a. Which complete bipartite graphs have an Euler circuit?
 - b. Which complete bipartite graphs have an Hamiltonian cycle?