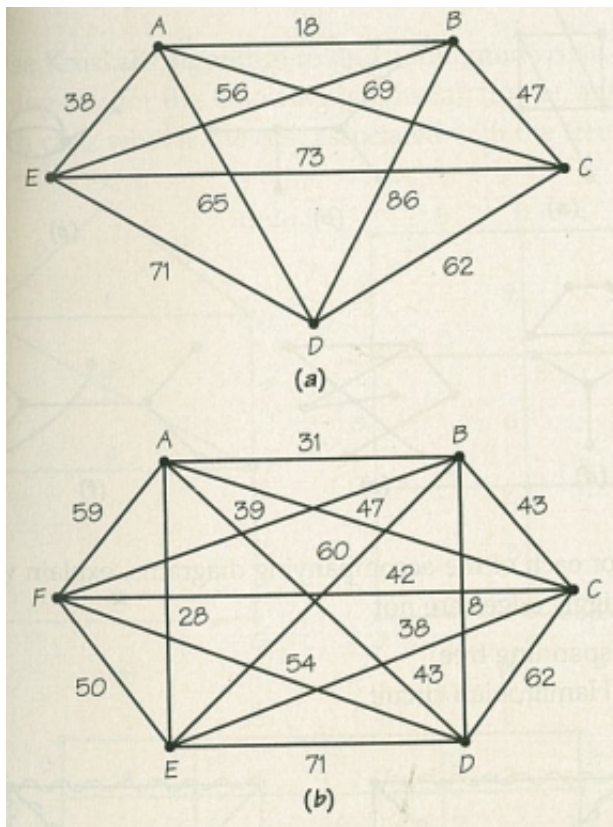


Homework Assignment No. 2

This assignment is due on Friday, February 5.

Problem 1

a For the two complete graphs that follow, find the costs of the nearest-neighbor tour starting at B and of the tour generated by the sorted-edges algorithm.



b How many Hamiltonian circuits would have to be examined to find a shortest route for part a by the brute force method?

c Invent an algorithm different from the sorted-edges and nearest-neighbor algorithms that is easy to apply for finding TSP "solutions."

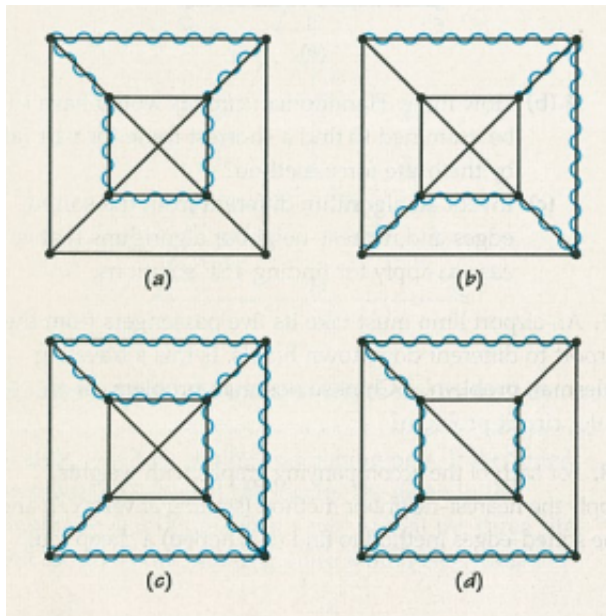
Problem 2 An airport limo must take its five passengers from the airport to different downtown hotels. Is this a traveling salesman problem, a Chinese postman problem, or an Euler circuit problem?

Problem 3 Construct an example of a complete graph of five vertices, with distinct weights for which the nearest-neighbor algorithm starting at a particular vertex and the sorted-edges algorithm yield different solutions for the TSP. Can you find a five-vertex complete weighted graph for which the optimal solution, the nearest-neighbor solution, and the sorted-edges algorithm solution are all different?

Problem 4 For each of the accompanying diagrams, explain why the wiggly edges are not

a a spanning tree.

b a Hamiltonian circuit.



Problem 5 Use Kruskal's algorithm to find a minimum-cost spanning tree for the following graphs. In each case, what is the cost associated with the tree?

