

Home Work 4 Due day: March 3

All solutions should be typed, using Latex preferably. Briefly explain the correctness and complexity of your solution.

- (1) Chapter 7, 3
- (2) Suppose we have a set of three sellers, labelled as a , b , and c , and a set of three buyers, labelled as x , y , and z . Each seller is offering a distinct house for sale, and the valuations of the buyers are as follows: Buyer x : 3 (for a), 6 (for b), 4 (for c); buyer y : 2 (for a), 8 (for b), 1 (for c); buyer z : 1 (for a), 2 (for b), 3 (for c). Describe what happens, if we run the bipartite-graph auction procedure, by saying what the prices are at the end of each round of the auction, including what the final marketclearing prices are when the auction completes. (Note that there may be multiple constricted set of buyers. You can choose anyone. Will the choice matter on the final market-clearing prices?)
- (3) Solve the airline scheduling problem shown in Figure 7.17. (a) Convert it first to the circulation problem. (b) Then convert the problem to the maximum flow problem. (c) Solve the problem for $K=1$, $k=2$, and $k=3$.
- (4) Chapter 7, 9
- (5) Chapter 7, 21
- (6) Chapter 7, 50