

Network Optimization (Fall 2008) — Homework 10

- The total points (given in parentheses) add up to 150. Math 566 students will be graded for 140 points, and Math 466 students for 135 points.
 - You **must** attempt problem 6 (MATLAB code).
 - **This homework is due in class on Thursday, December 4.**
1. (25) AMO 7.7 (page 244).
 2. (35) AMO 7.9 (page 244).
 3. (20) AMO 7.10 (page 245). Consider only the cases of FIFO preflow-push and excess scaling algorithms (ignore the case of labeling algorithm).
 4. (15) AMO 7.14 (page 246).
 5. (20) AMO 7.27 (page 247).
 6. (35) Write a MATLAB code that takes as input the forward star representation of a network, a source node s , a sink node t , and finds the maximum flow from s to t using the FIFO preflow push algorithm. The program should count the number of saturating and non-saturating pushes. It should output the flow vector \mathbf{x} corresponding to the maximum flow, the value of the flow, and the numbers of saturating and non-saturating pushes. Name your file as `FIFOPreflow_firstname_lastname.m` and email the MATLAB file to me. Solve the maximum flow problem in figure 7.21 (a) (page 243) as part of your code.