

## Network Optimization (Fall 2008) — Homework 3

- Exercises marked with a [G] target the graduate students (Math 566), but undergrads can attempt them for extra credit.
- The total points (given in parentheses) add up to 120. Math 566 students will be graded for 110 points, and Math 466 students for 95 points.
- **This homework is due in class on Thursday, September 18.**

1. (15) AMO 2.43 (page 51).
2. (10) AMO 2.44 (page 51).
3. (15) AMO 2.47 (page 51).
4. (15) AMO 2.49 (page 51).
5. (15) Consider the standard min-cost flow problem with the additional constraints that the total outflow from node  $i$  must be between  $\delta_i$  and  $\gamma_i$ , and the total inflow into node  $i$  must be between  $\delta'_i$  and  $\gamma'_i$ . Using network transformations, model this problem as a standard min-cost flow problem.
6. (25) [G] AMO 2.51 (page 52).
7. (25) AMO 3.5 (page 86).