Practice these problems before class on November 26. The answers to these problems will be covered in this class. Understanding the answers to these questions is the best preparation for the midterm.

1. Consider the following two problems. Can I solve this problem with a linear program? If so, how?

   (a)

   $$\max\ x_1 + x_2 \quad s.t.\ |x_1 - x_2| \leq 10$$

   (b) Consider the following problem:

   $$\min\ \max\{x_1, x_2, x_3\} \quad s.t.\ 3x_1 + 2x_2 - 5x_3 \leq 8$$

2. Hollywood. A film producer is seeking actors and investors for his new movie. There are n available actors; actor i charges s_i dollars. For funding, there are m available investors. Investor j will provide p_j dollars, but only on the condition that certain actors $Lj \subseteq \{1, 2, ..., n\}$ are included in the cast (all of these actors L_j must be chosen in order to receive funding from investor j).

   The producer's profit is the sum of the payments from investors minus the payments to actors. The goal is to maximize this profit.

   Question: Express this problem as an integer linear program in which the variables take on values $\{0, 1\}$.