Game Theory, Fall 2022
Problem Set 2

Due on Sep 25 in class

1. ST Exercise 4.6.

2. ST Exercise 4.7.

3. ST Exercise 4.8.

4. Consider the following two-player game. Each player announces a nonnegative real number. The payoffs are

$$v_i(x_i, x_j) = \begin{cases} 2, & \text{if } x_i = 0, x_j = 1, \\ \arctan x_i, & \text{if otherwise.} \end{cases}$$

   (a) Argue that every positive announcement is strictly dominated.

   (b) Argue that announcement 0 is not strictly dominated.

   (c) From the above two questions, we know only 0 survives IESDS for both players. Are they mutual best responses?

5. Consider the n-firm Cournot competition. The demand curve is still

$$D(Q) = \max\{100 - Q, 0\}.$$

   If each firm i supplies q_i, the total supply is $\sum_{i=1}^{n} q_i$. Suppose each firm's marginal cost is 10.

   (a) Write down its normal form game.

   (b) For each firm, what are the strategies that survive IESDS?

6. ST Exercise 5.5.