

Fall 2023

14.12 Game Theory

Tomasz Sadzik

Problem Set 6

Due: Monday, November 6 (10:00am EST)

You are encouraged to work together on the problem sets, but you must write up your own solutions. Consulting solutions from previous semesters (released by the instructor or written by other students) is prohibited. Problem sets must be submitted electronically through Canvas.

Late problem sets submitted within 24 hours of the deadline will be accepted with a 50% penalty. Problem sets more than 24 hours late will not be accepted. Make sure to allow yourself enough time to complete the submission process. (If you have technical difficulties, you may email your problem set to the TA by the deadline.)

Problem 1. Exercise 11.5.

Problem 2. Recall the stag hunt game from class in which each player chooses to hunt stag (S) or hare (H):

| | | |
|----------|----------|----------|
| | <i>S</i> | <i>H</i> |
| <i>S</i> | 2, 2 | 0, 1 |
| <i>H</i> | 1, 0 | 1, 1 |

Consider the repeated stag-hunt game with periods $t = 0, 1$. In period $t = 0$, the stag hunt game is played. In period $t = 1$, the players observe the actions from period 0 and then play the stag hunt game again. Each player's payoff in the repeated game equals the sum of her payoffs in the two stages.

- (a) Count the number of pure subgame perfect Nash equilibria in which (S, S) is played in period 0. Justify your answer.

- (b) Count the number of pure subgame perfect Nash equilibria in which (S, H) is played in period 0. Justify your answer.

Problem 3. Exercise 12.17.

Problem 4. Exercise 12.26.