

## Review sheet for the midterm

- Know how to find dominated actions in a normal form game
- Know how to apply IESDA ) in a normal form game
- Know how to find all NE (pure or mixed) in a normal form game
- Know how find payoff/risk-dominant actions in symmetric 2x2 normal form games
- Know how to compute the basin of attraction in symmetric 2x2 normal form games
- Know how to find pure strategy subgame perfect Nash Equilibrium in extensive form games (ultimatum, trust, etc)
- Review repeated games, including the examples we talked about in class
- Know how to argue that cooperation can be sustained in an infinitely repeated game if the players are patient enough... Think about how you could argue something similar for other games
- Do the optional homework

And, importantly,

- **Make sure you can explain all figures/tables/results in the papers we talked about in class.**
- To prepare, go through the slides and make sure you can explain in your own words the results in every figure and table.
- I can also ask you questions about experiments we ran in class.
- These can be questions about experimental design (for instance, describe the differences and similarities between the first experiment and the between subjects treatments in Agranov, et al) or the results. I will not ask you questions about the experiment with two urns.

### Optional homework:

- 1) Is it a strictly dominant strategy to defect in every period of a finitely repeated prisoner's dilemma game? Why/why not?
- 2) Explain why defecting in every period of an infinitely repeated prisoner dilemma game is not a strictly dominant strategy.
- 3) Find all subgame perfect pure strategy Nash Equilibria of this game played twice:

		Player 2		
		$b_1$	$b_2$	$b_3$
Player 1	$a_1$	10, 10	2, 12	0, 13
	$a_2$	12, 2	5, 5	0, 0
	$a_3$	13, 0	0, 0	1, 1

- 4) Consider a Cournot game with two firms producing  $q_1$  and  $q_2$  quantities of output, with aggregate quantity given by  $Q=q_1+q_2$ . Assume that the market price is given by  $P(Q)=a-Q$ . Each firm has a marginal cost of  $c$  and no fixed costs.
- i. What is the Nash equilibrium quantity? Equilibrium profit?
  - ii. What is the monopoly quantity? Monopoly profit?
  - iii. Consider the following trigger strategy. Produce half the monopoly quantity in the first period. In period  $t$ , produce half the monopoly quantity if both firms have produced half the monopoly quantity in all preceding periods. Otherwise, produce the Cournot quantity. Show that it is a subgame perfect Nash equilibrium to play this strategy as long as the discount factor is above  $9/17$ .