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Econ 812

HW #4 (please type all answers)

1. Suppose two players play the following games, in order:

Game #1:

		Player 2	
		Coop	Don't
Player 1	Coop	5,5	1,6
	Don't	6,1	2,2

Game #2:

		Player 2	
		Left	Right
Player 1	Left	5,1	0,0
	Right	0,0	1,5

Does playing Game #2 make cooperation in Game #1 sustainable if players do not discount future payoffs (β=1)? Why or why not? If a cooperative equilibrium is possible, would you expect it to be likely? Why or why not?

2. Suppose you are playing an infinitely-repeated PD game with payoffs from the Week 3-4 notes. The game ends each turn with probability p, and players discount the future by β. Under what conditions can *trigger strategies* sustain cooperation?

3. In an infinitely-repeated reputation game (with the payoffs from the Week 5 notes), imagine customers only punish a turn of Cheat with 50% probability of not buying the next turn. Solve for the seller's critical value of β.

4. Analyze the expected efficiency properties of the MSNE where two firms simultaneously incur sunk costs. Use the notation from the notes (V.I.) for the firms; designate maximum consumers surplus as CS_{max}, consumers surplus under monopoly as CS_{mon}, and note that if a good is not produced then consumers surplus is 0. Under what conditions is contestability with simultaneous sunk costs welfare-dominated by simple monopoly?

5. How does cost heterogeneity affect the welfare equivalence of perfect competition and Bertrand oligopoly? How much is this likely to matter in the real world? Use diagrams to illustrate your answer. (one paragraph)

6. Analyze the incentive for firms to increase their productive efficiency under Bertrand oligopoly. Use diagrams to illustrate your answer. (one paragraph)

7. Suppose that there are 4 Cournot competitors with MC=0 and no fixed costs. Prove that at least one of these firms would like to split into two firms; i.e., that $2*\Pi(5)>\Pi(4)$.

8. Suppose Cournot firms have a fixed cost, K, but 0 MC. If P=20-Q, solve for the free entry value of N as a function of K. Briefly explain why the first-best outcome sets N=1.