



Homework 5

due on the EXAM

Homework must be submitted BEFORE THE BEGINNING OF THE EXAM in piles by group number. Submissions in any other way or time will be ignored. Your name and your group number must be clearly visible on the TOP-RIGHT CORNER of your paper. Any paper which does not resemble work by a student of a world-class institution (not in A4 sheets, not clean, illegible, unnamed, unstapled, unlabeled tasks, final results not in boxes etc.) will be penalized with up to 50 points at the discretion of the grader. Do not submit your work in plastic covers. Copying in homework will be penalized with a 0 in that assignment and an additional penalty of 10 points in the course homework average. Students who give their homework away for others to copy from will be penalized with 0 in that assignment and a penalty of 30 points in their course homework average. Repeated offenders will be terminated from the course.

1. K and L play the following simultaneous pricing game for n periods and afterwards they will never interact again.

K\L	Low	High
Low	2, 4	8, 2
High	1, 10	5, 7

- (a) If $n = 1$, which would be the NE? Explain. [5p]
 (b) If $n = 1$, what would be the collusive outcome and why it could not be achieved? Explain. [5p]
 (c) Could the collusive result be achieved if both K and L know that $n = 3$? Explain. [5p]
 (d) Could the collusive result be achieved if both K and L know that $n = \infty$? Be as specific as possible. [5p]
 (e) Could the collusive result be achieved if $n = 3$ but both K and L wrongly believe that $n = \infty$? Explain. [5p]
 (f) Could the collusive result be achieved if L knows that $n = 3$ but K wrongly believes that $n = \infty$? Be as specific as possible. [5p]

2. Consider the following static game between Alice and Beatrice.

		Beatrice	
		<i>Odd</i>	<i>Even</i>
Alice	<i>Red</i>	0, 1	1, 0
	<i>Black</i>	1, 0	0, a

Find the NE for this game (pure or mixed) for all possible values of a . [20p]

3. The last qualifying match of Group C in the UEFA 2004 Euro was Sweden vs. Denmark. With all other matches already played the standings were

Team	Points	Goals
Italy	5	2
Denmark	4	1
Sweden	4	1
Bulgaria	0	0

In every soccer match, a win is awarded 3 points, a draw 1 point per team and a loss 0 points. The two teams with the most points in the group would qualify to the next round but teams were indifferent if they would qualify first or second. In case more than two teams ended up at the top with the same number of points, the number of goals scored would be used to break the tie. If the number of goals is also equal, Denmark and Italy would qualify over Sweden (because of further tie-breaking rules). The match was scheduled for June 22, 2004. Using terms we have covered in the course explain why the most likely result for this game would be 2-2. [This is a real case – number of goals is slightly modified to simplify tie-breaking but does not alter the facts]. [15p]

4. Kostia, Vasili and Yana attend Victoria's auction for an antique clock. Their valuations for the clock are 50, 60 and 100 coins respectively. Players know only their own valuations.
- What is the maximum possible gain for Victoria if the auction is *oral-English*, has starting price 20 coins and the minimum increase in every bid is 3 coins? Explain. [5p]
 - How much will Victoria gain if the auction is *Dutch*? Explain. [5p]
 - If the auction is *Dutch* and Victoria knows Vasili's and Kostia's valuations, should Victoria reveal them to Yana? Explain why or why not. [5p]
5. There are two (and only two) profit-maximizing football clubs bidding for the services of Alessandro, a star player with known capabilities. He is prepared to sell his services to the highest bidder. Each club knows that buying the player will boost demand for match tickets, both because the club will win more games and because fans will want to watch the player's skills. Suppose the demand curves are given by the following matrix, where P is the price per ticket for each club's games:

	Club 1	Club 2
With Alessandro	$a_{11} - b_{11}P$	$a_{21} - b_{21}P$
Without Alessandro	$a_{12} - b_{12}P$	$a_{22} - b_{22}P$

Assume that all costs of supplying seats to fans are fixed and there are no variable costs. How much should Alessandro expect to be paid? [20p]

Good afternoon!

One of the most crucial mistakes I have made in my life was to keep working full-time during my undergraduate studies. Having a job as a student gave me benefits: money (that back then seemed a lot to me), experience (some basic professional skills that I learned a couple of years earlier than my peers), prestige (most of my classmates did not work and I felt so different). Today, several years later, all of those benefits are not anymore relevant. However, the costs that I took to finance the lifestyle I had chosen (because I did not have to work to survive) are permanent. It was not only that I had to sacrifice my grades and it was a matter of pure luck that one of my professors randomly picked up that I may had the potential to follow an academic carrier and went out of his way to help me continue to graduate studies. The most serious cost I still face is that I never became a full member of the university student culture. Today, I see many of you who you have the university culture and you are so much smarter than I was in your age. I started developing this culture late, in my graduate studies, and today I still experience the handicap of my late start. At the campus you have the opportunity to listen to people talking about subjects that they have dedicated their lives learning and understanding. This makes you smarter. You can interact with your professors and teachers, ask them their opinions or give a run of your opinions to them. This challenges you and changes you intellectually. When I was in your age I believed that I would get smarter if I interacted with my boss: a guy who had read zero books in his life and the only thing he knew well was how to convince people to buy things they did not need for a profit. Overall, this made me dumber. The most important loss for me, however, was that I was never a member of my Alma Mater society. My university was (still is) the best economics institution in Greece and my classmates were selected among the best students of the nation. Back then I failed to to understand that at some point these people would become a valuable network. Today most of my classmates hold key positions in Greece and also abroad: politicians, CEOs, industry regulators, columnists, academics, bankers, accountants, federal officials etc. literally running the country and they know each-other with their first names because they spent their student lives together. Sometimes, when I meet them today I tell them that I also graduated from the same university the same period. They rarely and vaguely remember me. You see, when they were hanging out at the school cafeteria, I was at work "networking" with my... boss. Mind your future.

Kosmas

Estimated completion time: 120 min

Difficulty level (normalized to exam standards): 1.5/5 2. 6/5 3. 5/5 4. 4/5 5. 7/5