Name:_____

TA: _____José Gallegos_____

PhD Group: _____

$\boxed{\textbf{Version A}}$

Microeconomics II
SDPE, Stockholm School of Economics
First Assignment
"On the Nash Equilibrium"
Instructions

1. Assignments will be posted in the course Portal.

2. Each Assignment must be submitted at 9am the day before the TA session. By that same time, I will upload solutions to my webpage, joseeliasgallegos.com. I suggest you to have a look at them before coming to class.

3. Submission via email: jose.elias.gallegos@iies.su.se

4. Grading: Pass (P) or Fail (F).

5. I do not strictly demand Latex-written solutions. However, I think it would be useful for those of you who are not experts on Latex. What I will not accept are *pictures* of the hand-written solutions. They are usually unreadable. Please, make sure to scan them in a proper way such that I can easily understand.

Section 1. Pure Nash Equilibrium

Candidates A and B are competing in an election whose outcome is determined by simple plurality[1]. Of the n voters, k support candidate A and $m = n - k$ support candidate B. Each voter simultaneously makes a choice, $v_i \in \{0, 1\}$, with $v_i = 0$ if he/she abstains and $v_i = 1$ if he/she votes. Voting is costly: a voter incurs a cost of c if he/she votes where $c \in (0, 1)$.

A voter who abstains receives the payoff of 2 if the candidate he/she supports wins, 1 if this candidate ties for first place, and 0 if this candidate loses.

A voter who votes receives the payoffs $2 - c$, $1 - c$ or $-c$ in the three former cases.

1. Find the set of Nash equilibria (NE) in pure strategies for the case that $k = m$.

2. Find the set of Nash equilibria (NE) in pure strategies for the case that $k < m$.

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[1]A plurality voting system is a voting system in which each voter is allowed to vote for only one candidate, and the candidate who polls more votes than any other candidate (a plurality) is elected.