

Spring 2012/13 Econ 446

First Midterm Exam

3 Questions

Question 1

(10 points)

Suppose there are 4 agents. The utility of an agent i is at a network g is

$$u_i(g) = \text{the number of indirect neighbors of } i \text{ which are not direct neighbors of } i - \frac{1}{3} \text{ the number of links of } i$$

Find the pairwise-stable networks.

Question 2

(15 points)

Consider the job contact network g with 4 agents.

Suppose the probability to lose job $b = \frac{1}{2}$ and the probability to receive a direct job offer is $a = \frac{1}{2}$.

Suppose i and j are neighbors, then the probability of i receiving an indirect offer from j is

$$p(n_j(g)) = a(1-b) \frac{1 - (1-b)^{n_j(g)}}{bn_j(g)}$$

Question 3

Consider the network g with 4 agents.

Suppose each player i chooses an activity level x_i and the utility of an agent i is

$$u_i(x_i) = x_i - 5x_i^2 + \sum_{j \in g} x_i x_j$$

Solve for the Nash equilibrium of this game.

