PROBLEM SET 8

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(1) Consider a competitive industry with several firms all of which have the same cost function:

$$C(y) = y^{2} + 4 \qquad y > 0$$

= 0 y = 0

The demand curve for this industry is

$$D = 50 - P$$

where P is the price. What is the long run equilibrium number of firms in this industry?

(2) Consider the problem facing Forman and Shireen, a childless couple who live in the village of Dolali, Bangladesh. Forman, the male of the household, is a landless agricultural laborer; Shireen is his wife. By his labor Forman earns 150 Taka per year, while Shireen produces 100 units of household services(fetching water, cooking, cleaning, etc). Cultural norms dictate that Shireen cannot work in the field.

Both Forman and Shireen derive utility from consumption expenditures(measured in Taka) and household services. Given that they are married, they derive utility equal to

$$U(C_F, h) = ln(C_F + 1) + ln(h + 1)$$
 for Forman

$$U(C_S, h) = ln(C_S + 1) + ln(h + 1)$$
 for Shireen

where the sum of Forman and Shireen's consumption $C_F + C_S = 150$, but where both share the common benefit of Shireen's production of household services h.

- a) Compute the set of Pareto optimal allocation within Forman and Shireen's household.
- b) What is the worst possible allocation for Shireen, and how many utils does she get given this allocation? How about for Forman?

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- c) Suppose that in the event of a divorce Shireen continues to produce 100 units of h, but still cannot work in the fields, while Forman's labor is rewarded with 150 Taka, but he cannot produce household services. What are the utilities of each in the event of divorce?
- d) What is the set of core allocations for this couple? What utilities are possible in the core?
- e) What is the Nash bargaining solution?
- f) Now suppose that Shireen would be scorned by her community in the event of a divorce, reducing her utility by ln(101) utils. Recompute the Nash bargaining allocation. Even if they don't get divorced, how is Shireen's utility affected?