MIDTERM EXAMINATION

This exam is take-home, open-book, open-notes. You may consult any published source (cite your references). Other people are closed. The exam you turn in should be your own personal work. Do not discuss with classmates, friends, professors (except with Prof. Starr or Mr. Kravitz --- who promise to be clueless), until the examination is collected.

The completed exam may be submitted in class on Thursday, February 25 or on Friday, February 26 to Ms. Sydney Sprung at Sequoyah Hall 245; that office is open 7:30 - noon, 1:00 - 3:30. Submit by 3:00 PM.

Do any four (4) of the following problems from Starr's "General Equilibrium Theory" Draft Second edition. They count equally. Any paper submitting five problems will be counted on the lowest scoring four.

Problem 14.2   Hint: This problem treats existence of equilibrium with taxation. Assume the economy (before taxation) fulfills the assumptions of Theorem 14.1. After taxation assume that C.VII is still fulfilled. Will the economy after taxation fulfill the assumptions of Theorem 14.1? Note that the taxation is 'lump sum'; it merely redistributes endowment. Then does there exist a competitive equilibrium? Answer 'yes', 'no', or 'possibly.' Don't give a full mathematical proof. It should be sufficient to explain why Theorem 14.1 does or does not apply.

Problem 14.7   Hint: Recall the following notions
        Decentralization means that each household and each firm makes its decisions without taking into account the behavior of other households or firms --- even though the outcome of the economic process is highly interdependent (households buy goods that are supplied by firms and by other households).
        Market clearing means that supplies to the market are sufficient to fulfill demands and demands are sufficient to absorb supplies (with the possible exception of free goods).

Problem 19.12   Hint: There's a long build-up to this problem (in the page before it is stated) but the problem is really easier than it looks. Excise taxes change prices and price ratios. In the neighborhood of the endowment point,

for household 1 we have $MRS^1_{x,y} = \dfrac{u^1_x}{u^1_y} = \dfrac{1}{2} > \dfrac{p_x}{p_y + \tau_y} = \dfrac{.5}{2.5}$, so household 1

does not trade away from endowment. Similarly, for household 2, we have

$\dfrac{2.5}{.5} = \dfrac{p_x + \tau_x}{p_y} > \dfrac{2}{1} = \dfrac{u^2_x}{u^2_y} = MRS^2_{x,y}$, so household 2 does not trade away from

endowment. The market clears with no transactions. The problem states that there is a Pareto superior attainable allocation. What do you conclude?

Problem 19.13 Hint: Review the proof of Theorem 19.1. The reasoning there is that a Pareto preferable allocation must be more expensive than the competitive equilibrium (evaluated at the equilibrium prices), but if it is attainable it must also be more profitable --- a contradiction to the assumption of competitive equilibrium. There must be a step or an equation in the proof that is false when you apply it to the model of problem 19.12. What is it? Explain.

19.14 Hint: Assume there is a competitive equilibrium in problem 14.2. This is a different form of taxation from problem 19.12. It is what economists call "lump sum." There is no wedge between buying and selling prices.