1. The following refer to our discussions of welfare economics.

A. What is the first fundamental theorem of welfare economics? How does this theorem help guide the choices of the public economist?

B. What does the first fundamental theorem ignore that is taken into account in the second fundamental theorem of welfare economics?

C. Define Pareto Efficiency.

D. Use a properly labeled utility possibilities frontier to comment on the following statement.
   “Any efficient allocation will be preferred to any inefficient allocation.”

2.A. Assume that all markets are perfectly competitive, there are no external effects and taxpayers are not paternalistic. In the space below, show that in-kind transfers are inconsistent with efficient resource allocation. Be sure to define the goods you are using and label all axes, lines and intercepts. Give a clear explanation using the above graph. Be sure to define the preferences of the recipients and tax payers.

B. Olsen in “Housing Policy and the Forgotten Taxpayer” gave several criteria he felt were necessary for sound housing policy. We argued that these could be extended to most programs. Using your understanding of the food stamps program, discuss two criteria Olsen gives and how well they apply to the food stamps program.

3. Consider a household with income of $1,000 per month that spends their income on food ($P_{food} = 2$) and other goods ($P_X = 1$).

A. In the space below, show a properly labeled graph of the budget constraint in the absence of any government intervention. In the absence of any government intervention, assume this household spent $240 on food.

B. Assume that the household is entitled to $200 worth of food stamps. Show the budget constraint under the food stamps program. Clearly indicate the values at all intercepts and any kinks.

C. Can you make any predictions about the change in the level of food consumption under the food stamps program? If so, what is your prediction. Using the tools of economics, explain your prediction.

D. We want to compare the current food stamps program with the “purchase requirement” program of the 1970s. Under the purchase requirement the above household would be sold $300 worth of food stamps for $100. Show the budget constraint under the purchase agreement in the space above.

E. What types of households would be indifferent between the current program and the purchase requirement program?

E. What types of households would be affected by a purchase requirement?

F. Why might we find the purchase agreement a better system over the current food stamps program? Think about what we are hoping to accomplish with this program.
4.A. Assume a two-person economy, Bill and Monica. The respective incomes are $M_B$ and $M_M$. $[M_B > M_M]$ Both care about the well-being of the other, but neither is an egalitarian. In the space below, show a properly labeled graph of all the possible allocations of the two persons’ incomes, put Bill’s post-transfer income on the horizontal axis. Using representative indifference curves, show all the efficient allocations of resources.

Use your graph to discuss the following, think of the possible initial allocations that would make the following true and which would make the following false:

B. Since Bill is richer than Monica, taking money away from Monica and giving it to Bill cannot lead to an efficient allocation of income.

C. If Bill has all the income, this will lead to an efficient allocation of income.

5. Assume all markets are perfectly competitive. The only external effect is the pollution caused by one agent's consumption of some good. If you prefer use Adam and Eve as the two agents and Heat/Smoke and Bread as the two goods.

A. In a properly labeled Dolbear triangle, show the initial allocation and all the efficient allocations preferred by both individuals when the polluter is given the right to fill the air with pollution. Be sure to properly label both axes, any indifference curves, the contract curve [also called the conflict curve], and all intercepts. Label the initial allocation as “A”.

B. Does an efficient allocation imply less pollution?

C. Assume instead that the affected agent has the right to clean air. Label this initial allocation as “X”.

D. Is this allocation efficient? Briefly explain.

E. What exchange would have to take place if the two parties were to negotiate to an efficient allocation preferred by both? Discuss the logic of this exchange.

6. Consider the market for tulips. The planting of tulips conveys positive benefit for the home owner and for households living in the area. Below is a graph of the supply and demand for tulips. Label both axes, both lines and the equilibrium price and quantity, $P_0$ and $Q_0$, respectively.

A. Assume the marginal external benefit from tulips is a constant $2 per tulip. Show the marginal social benefit, the marginal private benefit and the marginal external benefit curves in the graph above.

B. Does the market equilibrium lead to an efficient allocation of resources? Briefly explain.

C. Consider the use of a Pigovian subsidy to bring this market to an efficient allocation. At what level should we set the subsidy? Be as specific as possible. Show the change in the market due to this subsidy. Label price and quantity under the subsidy, $P_s$ and $Q_s$.

D. Show an area that represents the net gain to society of this subsidy.

7. Define the following terms.

A. Log rolling.

B. Coase Theorem. Give an example where Coase Theorem could be used.

C. Arrow’s Impossibility Theorem. What are the important implications of this theorem?

D. Rational voter ignorance. Be sure to explain why it is rational.