**Recitation 3**

The following exercise is not hard but requires some thinking. Make sure you understand the geometry of the problem.

The typical American male has $600 to spend on cigarettes (x) and beef jerky (y). The price of a carton of cigarettes is $20 and the price of a packet of beef jerky is $5. With his $600 he purchases 18 cartons of cigarettes and 48 packets of beef jerky. Both cigarettes and beef jerky are normal goods.

1. Illustrate the budget set. Illustrate an indifference curve through his best bundle at (18,48).

The government would like to discourage the smoking of cigarettes. One way to do so would be to impose a tax on cigarettes. Suppose the government imposes a $5 tax on each carton of cigarettes.

1. Illustrate the effect of the tax on the budget set.
2. Illustrate the effect of the tax on cigarettes on his choice of best bundle in the diagram. Clearly illustrate the income and substitution effects. Is a fall in consumption of beef jerky consistent with the assumption that it is a normal good?
3. Illustrate the revenue of the cigarette tax in units of beef jerky.

The government imposed the tax on cigarettes in order to discourage smoking; the goal was not to generate tax revenues. Hence the government decides to rebate the tax revenue to the consumer.

1. Suppose that the government rebates all of the tax revenue, what is the new budget line?
2. Why is the typical American male made worse off by the tax and rebate scheme even though the rebate is equal to all of the tax revenue? (Use the diagrams to show this).
3. Show that he will definitely consume fewer than 18 cartons of cigarettes under the tax/rebate scheme.