1. In the lecture we discussed the "neoclassical model of labor-leisure choice".

(a) Give the corresponding utility function that we used, specify the variables that enter the utility function, and describe what the utility function intends to express.

(b) The utility function can be represented by a family of Indifference Curves (ICs). We discussed four properties of ICs, one of which was that they are convex to the origin.

   (b1) Give explanations of the three other properties of ICs [you may use a graph for illustration, but it is not required].

(b2) Suppose that the ICs between consumption and leisure are concave to the origin. In general, how many hours will a person allocate to leisure activities?

   [Hint: Drawing some concave ICs and a budget line should guide you to the possible solution(s)]

2. Consider the general "neoclassical model of labor-leisure choice". In the lecture we assumed that the wage rate w is constant, i.e. w does not change with the amount of hours worked. Now suppose that employers pay an overtime premium equal to "time and a half" – i.e., 1.5 times the straight-time wage – for any hours worked in excess of 40 hours. What happens to a worker's desired hours of work (= labor supply) in this scenario?

   [Hint: Support your answer with a graph, and argue using the budget line. Distinguish three kinds of workers: persons working 40 hours per week initially, persons working more than 40 hours per week initially, and persons working less than 40 hours per week initially. In what way do hours of work (not) change for each of these groups under the new overtime policy?]

3. Consider the general "neoclassical model of labor-leisure choice", with the worker having some positive non-labor income V>0, and leisure being a normal good. Suppose that the price p of goods purchased in the marketplace rises.
(a) Consider a worker who is currently not working. What is the impact of the price increase on the worker's reservation wage and the worker's probability of entering the labor force? Support your argument with a graph. [Hint: Consider that V/p denotes the amount of goods that can be purchased given a certain positive non-labor income V and price of goods p. Argue using the endowment point, and recall what we said about the slope of ICs for any given level of leisure.]

(b) Consider a worker who is currently working. What is the impact of the price increase on her hours of work? Support your argument with a graph. For simplicity, assume that V=0. Explain the two opposite effects that arise, and delineate them in your graph.

4. Suppose you have the option to either take a bus or your car to get to work. A bus pass costs $5 per week, and the total weekly costs associated with using the car (parking, gas, etc.) are $60. Using the car, you are half-an-hour faster on a one-way trip than if you take the bus.

(a) If your wage rate is $10 per hour, how would you prefer to get to work?

(b) Suppose your wage rate changes to $20 per hour. Would that lead you to change your preferred mode of transportation?

[Assume that you work 5 days a week, and that the time spent either on the bus or in the car does not enter your utility directly.]

5. Sally’s preferences for consumption and leisure can be expressed as: U(C,L)=(C-200)*(L-80). This utility function implies that her marginal utility of leisure is (C-200) and the marginal utility of consumption is (L-80). There are 168 hours in the week available to be split between leisure and work. Sally earns $5 per hour after taxes. She also receives $380 worth of welfare benefits each week regardless of how much she works.

(a) Graph Sally’s budget line.

(b) What is Sally’s marginal rate of substitution if L=100 and she is on the budget line?

(c) What is Sally’s reservation wage?

(d) Find Sally’s optimal amount of consumption and leisure.