Due Date: October 12

Be sure to show all of your work and clearly indicate your final response to each question

1. An individual’s preferences regarding consumption of a market good and leisure are represented by the utility function $U(x, l) = .5\ln(x) + .5\ln(l)$, where $x$ denotes the level of consumption of a market good which has a price of 2 per unit and $l$ denotes the consumption of leisure. The individual has a time endowment ($T$) equal to 5 units, and can work in the market at a wage equal to 4 per unit time. Her nonlabor income ($I$) is equal to 10.

   1. Compute her reservation wage.
   2. How many units of time will she spend at work?
   3. If the government imposes a tax of 50% on labor market income only, how much time will she spend in the labor market?
   4. If the government imposes a tax of 50% on all income, how much time will she spend in the labor market?

2. Individuals in a population possess utility functions of the form $U(x, l) = \ln(l) + x$, where $l$ denotes leisure and $x$ denotes consumption of a market good which has a price of 1. The nonlabor income of the individual is denoted by $I$ and the time endowment of the individual is $T = 1$.

   1. Does the reservation wage depend on the nonlabor income of the individual?
   2. Assume one-half of the population can earn a wage of 2 and the other half can earn a wage of 1. If the total population size is $N$, compute the total amount of labor supplied to the market.
   3. If the wage of both groups is increased by 50%, what is the change in labor supply by each group and in the total population?

3. Text Problem 19.1
4. Text Problem 19.2

5. Text Problem 19.3

6. Text Problem 19.4

7. An individual has utility defined over income, $U(I) = I^\alpha$, $\alpha \in (0,1]$. The individual can choose between one of two occupations, $A$ or $B$. In either occupation income is a random variable. In occupation $A$ the individual may earn 100 with probability .5 or 200 with probability .5. In occupation $B$ the individual may earn 0 with probability .5 and $\hat{w}$ with probability .5, where $\hat{w} > 0$.

1. If $\hat{w} < 300$ and $\alpha < 1$, determine which occupation the individual will choose.

2. Find the value of $\hat{w}$ which will make the individual indifferent between choosing occupation $A$ or $B$.

3. Using the value of $\hat{w}$ you determined in the section immediately above solve the occupational choice problem for an individual with $\alpha = 1$