**Intermediate Microeconomics**

**Assignment 2**

**Tutorial:** Tuesday 5:15pm

**Due Date:** 22nd of May – 11:59pm

# Question 1:

## 1a)

The demand function of a good shows the quantity of the good that is consumed/demanded at a given price to maximize utility while being subject to a budget constraint.

From Chun’s utility function, we can determine her preferences and how much utility she derives from different bundles of goods. So:

Utility is maximized when MRS equals relative prices, therefore:

Plugging these equations in the budget constraint:

## 1b)

Petrol is a normal good as when increases, the quantity demanded of petrol will increase.

## 1c)

As the term is not present in the demand function of petrol, it suggests that has no effect on the quantity demanded of petrol. Hence, petrol is neither a substitute nor a complement.

## 1d)

At :

## 1e.i)

At :

## 1e.ii)

Change in consumer surplus when increases from to :

## 1f.i)

Income needed to consume original bundle () at new prices:

The rebate should equal the difference in incomes, so:

## 1f.ii)

At :

## 1g)

To make Chun just as happy as she was before, the utility she derives from her new bundle should equal the utility she obtained from her original bundle.

Income needed to achieve this utility at current prices:

The rebate should equal the difference in incomes, so:

Therefore, petrol demanded with rebated adjusted income and new prices:

## 1h.i)

Slutsky Method represented in part (f):

## 1h.ii)

Hicks Method represented in part (g):

# Question 2:

Since is a complement to , as the price of , increases, the quantity demanded of should decrease. The inverse also applies, where a decrease in should cause an increased demand for both goods.

Since , and given the above, it can be seen that the parameter must be less than zero (), this way any increase in the parameter results in a decrease to the quantity of and vice versa.

Knowing the relationship of as a complement to does not allow us to impose a restriction on the taste parameter or , as these parameters may take any value ( while still maintaining a positive quantity of good . Finally, the parameter must be a strictly positive real number

( so that the quantity demanded of is non-negative. Also, cannot be or there would be no relationship between and in this case as no quantity of would be demanded regardless of the other parameters.

# Question 3:

## 3a)

Connie’s demand for , given a price of equal to , an income of and a price of good equal to is given by:

The demand function for good x is:

## 3b)