These are the official questions:

A consumer has a demand function for good 1:

Where and are respective prices of good1 and good2 and is the income.

a) Show whether good 1 is a (gross) substitute or a (gross) complement for good 2. (2 marks)

The initial values of variables are:

b) What is the original optimal consumption? [1 marks]

The price of good one decreases from to .

c) What is the income that would make the original consumption of both goods just affordable at new the prices? [3 marks]

d) What is the Slutsky substitution effect of the price change? [5 marks]

e) What is the Slutsky income effect of the price change? [4 marks]

f) Show that the Slutsky equation holds. [4 marks]

g) Assume well-behaved preferences and draw a diagram, with on the horizontal axis and on the vertical axis, showing the Slutsky substitution effect and income effect you calculated in parts d) through e). Label the initial budget line, the final budget line, and the line that passes through the initial bundle and is parallel to the final budget line, and show the axis intercepts for each. Show the coordinates of the optimal bundles on each budget line and draw the indifference curves through these optimal bundles. Show the substitution and income effects on both goods with arrows. [5 marks]

h) Using your diagram, for each good, determine whether it is an inferior good or normal good. Justify your answer. If there is not sufficient information to determine the type of good, explain why. [4 marks]

i) Using your diagram, for each good, determine whether it is an ordinary good or Giffen good. Justify your answer. If there is not sufficient information to determine the type of good, explain why. [3 marks]

These are my answers:

**A).**

Determining whether good 1 is a gross substitute or complement for good 2 depends on the change in demand on good 1 as the price of good 2 changes.

In order to determine whether good 1 is a gross substitute or complement, the partial derivative is taken:

= 6

As the partial derivative resulted in a positive number, this means that good one is a GROSS SUBSTITUTE.

**B).**

The Original Optimal Consumption:

= 50

Therefore the Original Optimal Consumption = 50

**C).**

Therefore,

Therefore the income that would make the original consumption of both goods just affordable at the new prices is an income of $**75.**

**D).**

Original Price: 1x1 + 1x2 = 100

x1 = 19 + m = 100/4(1) + 6(1) = 50

Price decreases: 0.5x1 + 1x2 = 100

X1 = 19 + m =100/4(0.5) + 6(1) = 75

Therefore,

= 75

Sub new values into the demand function;

= 19 + 75/4(0.5) + 6(1)

= 62.50

Resulting in;

= 62.5 – 50

= 12.5

Therefore $12.50 is the price change effect caused by the Slutsky Substitution.

**E).**

= 75

= 75 – 62.5

= 12.5

**F).**

The Slutsky equation states that the total effect of the price change is equal to the sum of the substitution and income effects.

Total change =

= 75-50

= 25

= 25

Therefore as both above equations result in 25, the Slutsky equation holds.

Thank you so much for the help ☺ I have an exam soon so I’m trying to go over absolutely everything from my lectures.