

## Assignment 1

*Due in tutorial in the week of January 26<sup>th</sup>*

*Each problem is worth 5 marks, 20 marks in total.*

Do **Problem 18 from Chapter 4**. For full marks provide full explanation, calculate all relevant variables and use diagrams.

**Problem 1.** Mary's demand for oatmeal is given by  $P = 1.80 - .05Q$  where  $P$  is price in dollars and  $Q$  is measured in pounds she buys per year.

- (a) What is the maximum amount of money Mary would pay for a 20 lb box of oatmeal? (1 mark)
- (b) Grocery stores sell oatmeal at 80 cents/lb and "Save on Oats" offers oatmeal at 60 cents/lb but requires a yearly membership. What is the maximum membership fee Mary would pay? (*Hint: the max she will pay for membership is equal to the **increase** in her CS as she shops in Save on Oats compared to shopping elsewhere.*) (2 marks)
- (c) Show your results for part (b) on a carefully labeled diagram. On your diagram show Mary's CS in grocery stores, CS in "Save on Oats" and the membership fee. (2 marks)

**Problem 2.** Consider the following demand function:  $P = 10 - 2Q$ . Calculate  $TR$  and elasticity of demand when quantity is equal to 1, 2, 2.5, 3, and 4. Show your results on diagrams with the demand curve and a plot of  $TR$  against  $Q$ . (1 mark)

Mary owns a business and thinks that if she increases the price of her product her sales revenue **must** increase. Use your diagrams and concepts from class to explain to Mary why she might be wrong (show how and under what circumstances increasing price will lower the TR). Make your explanation simple and precise, so that Mary can understand it even if she has never taken any economics courses. (4 marks)

**Problem 3.** Initially Killer Pizza charges  $P = 1.25$  per slice of pizza and at this price it is selling 30 slices of pizza per hour. Consider parts (a) and (b) to be independent changes.

- (a) When the neighbouring Red Burrito increased price of burritos from 1.00 to 1.25 dollars the quantity of pizza sold by Killer Pizza increased to 39 slices per hour. Calculate cross price elasticity of the demand for pizza. Are pizza and burritos complement or substitute goods?<sup>1</sup>
- (b) Suppose that due to tax cuts disposable income of consumers increased from 25,000 to 30,000, after which the quantity of pizza sold increased to 36 slices per hour. What is the income elasticity of the demand for pizza? Is pizza a normal or an inferior good?

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<sup>1</sup>In order to avoid confusion with the numbers you can do the following. Denote pizza as good 1, then the quantities before and after burrito price change are  $Q_1^0$  and  $Q_1'$ . Buritos is good 2, denote the initial and final prices as  $P_2^0$  and  $P_2'$  respectively. For calculations use formula for arc elasticity and the initial point. Alternatively you can use percentage changes in price and quantity.