Problem Set 2

Q1) Suppose the government levies a tax of 2 TL per bottle of wine. Show on a graph the effect of this tax on the equilibrium price and quantity assuming that the demand for wine is elastic. Do consumers or suppliers bear a greater proportion of the tax?

Q2) Suppose that the market demand for beef is given by $Q_D = 200 - 6P + 2Y$, where $P$ is the price of meat per kg and $Y$ is the consumers’ income.
   a) Suppose that consumers’ income is 100 TL. If the price of beef decreases from 10 TL to 8 TL per kg find the corresponding midpoint price elasticity of demand.
   b) Now suppose that the price is fixed to 8 TL while consumers’ income increases from 100 TL to 150 TL, find the corresponding income elasticity of demand.
   c) Is beef a normal good?

Q3) Is price competition between firms more likely when demand is price elastic or inelastic?

Q4) What sign would you expect the cross-price elasticity of demand for jam and marmalade to have? What about the cross-price elasticity for coffee and cream?

Q5) Consider a general demand function for a good, $Q_d = a - bp$.
   a) Find the price (in terms of $a$ and $b$) at which the demand is unit elastic.
   b) Find the price at which total expenditure of consumers is maximized.

Q6) We have the following demand and supply functions for a good: $Q_d = 40 - 2P$ and $Q_s = 10 + 3P$.
   a) Find the equilibrium price and the quantity.
   b) Calculate the elasticity of supply at equilibrium.
   Now suppose government introduces a specific tax $t = 2$ in the market that has to be paid by suppliers
   c) Find the equilibrium prices and the quantity after tax.
   d) Which party (consumers or suppliers) bear most of the tax burden? Explain your reasoning.
Q7) Good X is an ordinary and inferior good. Assume the price of good X increases. State the signs of the following effects of the price change on quantity of X demanded.

a) Substitution effect: positive, negative, or ambiguous? Explain.

b) Income effect: positive, negative, or ambiguous? Explain.

c) Total effect: positive, negative, or ambiguous? Explain.

Q8) Consider a consumer who spends her income (m) of $30 on apples (A) and bananas (B). The price of an apple (pa) is $2, and the price of a banana (pb) is $4. (Assume apple and banana can be consumed at fractional units.)

a) Draw the consumer’s budget line (with banana on vertical axis). Show affordable and unaffordable regions.

b) If the $\text{MU}_A / \text{MU}_B = B/A$, find the optimal bundle that the consumer will choose.