Total Points: 40

Principles of Microeconomics

ECO 101
Fall 2023
Section 13 (Non-Majors)
Assignment One

Instructions: You can complete this in groups of no more than 4 people. Submission is in class on November 2nd, 2023. I will not be accepting submissions after class.

Question 1: Dairies make low-fat milk from full-cream milk. In the process of making low-fat milk, the dairies produce cream, which is made into ice cream. In the market for low-fat milk, the following events occur one at a time:

(i) The wage rate of dairy workers falls.

(ii) The price of cream falls.

(iii) The price of low-fat milk falls.

(iv) With the period of low rainfall extending, dairies raise their expected price of low-fat milk next year.

(v) A new technology lowers the cost of producing ice cream.

1. Explain the effect of each event on the supply of low-fat milk. (5)

2. Use a graph to illustrate the effect of each event. (4)

3. Does any event (or events) illustrate the law of supply? (1)

Question 2: Given the inverse-demand and inverse-supply equations in the Playbox [a gaming console] market are:

$$P^D = 1000 - 4Q^D \quad \text{and} \quad P^S = 300 + 3Q^S$$

1. Find the equilibrium price and quantity. (2)

2. Graph the equations above and label the equilibrium values. (2)

3. If demand increases by 2 units at each price and supply decreases by 3 units at each price, what are the new demand and supply equations? (3)

4. Find the new equilibrium values and graphically show the changes in the market. (3)

Question 3: Refer to the demand and supply equations in Question 2.

1. The change in demand (increases by 2 units at each price) occurs due to an increase in consumer income. Is Income Elasticity of Demand (IED) positive or negative? Answer without any calculations. (2)

2. Assume supply does not change and only the demand changes due to increase in income. Calculate the new equilibirum values. Assume that intial income increased from \$1000 to \$1500. What is the value of IED? Interpret the value. (4)

3. A successful marketing campaign by Playbox's rival, Sleepstation, is done where Sleepstation reduce their price from \$500 to \$450 a unit. This switches consumption away by 3 units at each price level for the Playbox (assume the original demand equation: $P^D = 1000 - 4Q^D$). Show this graphically and find the new equilibrium values. Calculate the cross-elasticity of demand. What does the sign tell you about the nature of the relationship between Playbox and Sleepstation? (4)

Question 4: Refer to the following inverse-demand and inverse-supply equations

$$P^D = 200 - 4Q^D \quad \text{and} \quad P^S = 20 + 2Q^S$$

1. Find the equilibrium values. Calculate consumer and producer surplus. (4)

2. If price is at $80, what is consumer surplus? How does it compare to consumer surplus in (1)? (2)

3. If there is underproduction, what will happen to total surplus?

   Graph the equations and show the deadweight loss. (4)