

Homework #2

Problem 1: For each of the following claims, please state if it is true, false or uncertain. Provide a brief written justification for your answer (a sentence or two will suffice).

- (1) When the price of tomato sauce increases by 5%, the quantity demanded drops by 10%. Then, demand of for tomato sauce is elastic.
- (2) Notebooks have an inelastic demand. When the price of notebooks drops by 1%, the quantity demanded demand increases by 2%.
- (3) The quantity of coffee demanded drops by 5% after that the price increase by 5%. It means that the demand for coffee is unit elastic.
- (4) Demand a farmer's wheat is inelastic. When the price of wheat increases by 20%, the revenue of the farmer increase by 5%.
- (5) If my income increases by 10%, then quantity of public transportation demanded drops by 5%. I can say that income elasticity of my demand for public transportation is negative and that public transportation is a normal good.
- (6) If the demand for cheese in France is perfectly inelastic, an increase in the price of cheese will reduce the quantity demanded.

Problem 2: Chuck, Michael and Hakeem are three retired basketball players. They determine that in Madison there is demand for private basketball coaching. The demand and supply curves for private basketball coaching are $Q_d = 50 - 0.5 \cdot P$ and $Q_s = P - 10$ respectively.

- (1) Find the equilibrium price and quantity
- (2) What is the price elasticity of demand at the equilibrium calculated in part (1)? Is demand for basketball coaching elastic or inelastic?
- (3) Calculate the price elasticity of demand on the segment (arc) of the demand curve between the prices of \$20 and \$40
- (4) What is the price elasticity of supply calculated at the equilibrium calculated in part (2)? Is the supply of basketball coaching elastic or inelastic?

Problem 3: The demand and supply curves for fixed gear bikes in Hipsterland are $Q_D = 225 - 1.5 \cdot P$ and $Q_s = 1.5 \cdot P - 45$ respectively.

- (1) Find the equilibrium price and quantity
- (2) Find the price elastic of demand and the price elasticity of supply at the equilibrium in part (1)
- (3) What are the consumer surplus, producer surplus, and total welfare at the market equilibrium calculated in part (1)
- (4) There are too many fixed gear bikes in Hipsterland and city leaders are looking for ways to reduce the quantity. They are considering policies which would reduce the number of fixed gear bikes.
 - a. Suppose that municipality imposes a quota of 60 on the number of bikes. What are the producer and consumer surplus? Is there any deadweight loss? If so, how much?¹
 - b. Suppose the municipality imposes a price floor of \$110 in the market for fixed gear bikes. What are the producer and consumer surplus? Is there any deadweight loss? If so, how much?
 - c. Suppose the municipality decided levy a unit tax \$40 on retailers for each fixed gear bike sold. Calculate the new equilibrium price and quantity. What is the incidence of the tax on consumers? On producers? What are the producer and consumer surplus? What is the revenue of the tax? Is there any deadweight loss? If so, how much?
 - d. Compare the policy options in parts a., b., and c., on the basis of the reduction in fixed gear bikes, revenue, and dead weight loss. Which option would you recommend and why?

¹ We are not going to cover simple quotas in lecture, but they are covered in our text.