

Homework 4 (80 Points)

SUGGESTED SOLUTIONS

Part I (2 Points Each)

1. Holding all other forces constant, when the price of a bracelet was \$25 each, the jewelry shop sold 20 per month. When it raised the price to \$35 each, it sold 14 per month. Using the midpoint method, the price elasticity of demand for bracelets is about
 - (a) 1.66.
 - (b) **1.06.**
 - (c) 0.94.
 - (d) 0.60.
2. Which of the following statements is correct?
 - (a) The demand for natural gas is more elastic over a short period of time than over a long period of time.
 - (b) The demand for smoke alarms is more elastic than the demand for Persian rugs.
 - (c) **The demand for bourbon whiskey is more elastic than the demand for alcoholic beverages in general.**
 - (d) All of the above are correct.
3. Which of the following is likely to have the most price inelastic demand?
 - (a) laptop computers

- (b) lattés
 - (c) designer jeans
 - (d) **college tuition for a 4th year college student**
4. Pierre says that he will spend exactly 10 dollars a day on coffee, regardless of the price of coffee. Pierre's demand for coffee is
- (a) perfectly elastic.
 - (b) **unit elastic.**
 - (c) perfectly inelastic.
 - (d) None of the above answers is correct.
5. When we move upward along a linear, downward-sloping demand curve, price elasticity of demand
- (a) first becomes smaller, then larger.
 - (b) **always becomes larger.**
 - (c) always becomes smaller.
 - (d) first becomes larger, then smaller.
6. Fiona's Fish Emporium increased its total monthly revenue from \$1,500 to \$1,800 when it raised the price of tropical fish from \$5 to \$9. Suppose demand did not shift during this time, the price elasticity of demand for Fiona's Fish Emporium is
- (a) 0.57
 - (b) **0.70**
 - (c) 1.43
 - (d) 2.20
7. Necessities such as food and clothing tend to have

- (a) high price elasticities of demand and high income elasticities of demand.
 - (b) high price elasticities of demand and low income elasticities of demand.
 - (c) low price elasticities of demand and high income elasticities of demand.
 - (d) **low price elasticities of demand and low income elasticities of demand.**
8. Last month, sellers of good Y took in \$100 in total revenue on sales of 50 units of good Y. This month sellers of good Y raised their price and took in \$120 in total revenue on sales of 40 units of good Y. At the same time, the price of good X stayed the same, but sales of good X increased from 20 units to 40 units. Suppose changes in the sales of X are driven by demand shifts as a result of changes in the price of Y, we can conclude that goods X and Y are
- (a) substitutes, and have a cross-price elasticity of 0.60.
 - (b) complements, and have a cross-price elasticity of 0.60.
 - (c) **substitutes, and have a cross-price elasticity of 1.67.**
 - (d) complements, and have a cross-price elasticity of 1.67.
9. Which of the following statements is valid when supply is perfectly elastic at a price of \$4?
- (a) **The elasticity of supply approaches infinity.**
 - (b) The supply curve is vertical.
 - (c) At a price below \$4, quantity supplied is infinite.
 - (d) At a price above \$4, quantity supplied is zero.
10. A decrease in supply will cause the largest increase in price when
- (a) **both supply and demand are inelastic.**
 - (b) both supply and demand are elastic.
 - (c) demand is elastic and supply is inelastic.

- (d) demand is inelastic and supply is elastic.
11. The federal government is concerned about obesity in the United States. Congress is considering two plans. One will ban the production and sale of “junk food.” The other will increase nutrition-education programs and include substantial advertising campaigns to encourage healthy eating habits. The junk-food ban program
- (a) and the education program will reduce the quantity of junk food sold and raise the price.
- (b) and the education program will reduce the quantity of junk food sold and lower the price.
- (c) **will reduce the quantity of junk food sold and raise the price. The education program will reduce the quantity of junk food sold and lower the price.**
- (d) will reduce the quantity of junk food sold and lower the price. The education program will reduce the quantity of junk food sold and raise the price.

Part II (18 Points)

1. Suppose the labor market can be represented by the following equations for supply and demand:

$$\text{Supply: } W = 0.05Q_S$$

$$\text{Demand } W = 20 - 0.15Q_D$$

, where W denotes wage, Q_S is the quantity of labor supplied (in hours), and Q_D is the quantity of labor demanded (in hours)

1.1. What are the equilibrium wage and hours of employment in this market? (2 Points)

$$(W^*, Q^*) = (5, 100)$$

1.2. What are the price elasticity of demand and the price elasticity of supply at this equilibrium? (2 Points)

$$\epsilon_{d,p} = \frac{dQ_D}{dW} \frac{W^*}{Q^*} = \frac{1}{.15} \frac{5}{100} = .33$$

$$\epsilon_{s,p} = \frac{dQ_S}{dW} \frac{W^*}{Q^*} = \frac{1}{.05} \frac{5}{100} = 1$$

Note: the result that $\epsilon_{s,p} = 1$ should also be readily apparent from the fact that the supply curve is linear and has zero intercept.

1.3. Suppose that a minimum wage of \$12.5 is established. How many hours will be employed at that wage? How many will be unemployed? (2 Points)

At $W = 12.5$, $(Q^S, Q^D) = (250, 50)$. Hence 50 hours will be employed at this wage and 200 will be unemployed.

1.4. Would the implementation of the \$12.5 minimum wage increase or decrease the total wage income earned in this labor market? (2 Points)

increase. Since labor demand is inelastic.

2. Fred spends his monthly paycheck going out to dinner and going to concerts. His income varies from month to month as does the price of dinners out and the price of concerts. The table below shows the data on number of times he has eaten out each month as well as his income in the month as well as the prices he faced during each month.

Month	Income	Dinner Price	Concert Price	Quantity of Dinners out
Apr	200	10	20	10
May	400	10	20	20
Jun	200	20	20	5
Jul	150	15	30	5

2.1. To calculate Fred's price elasticity of demand for dinners out, we should use the data for the months of April and June because dinner prices differ between these months but everything else is the same. Using the mid point formula for elasticity, the price elasticity of demand is 1. (4 Points)

2.2. To calculate Fred's income elasticity of demand for dinners out, we should use the data for the months of April and May because income differs between these months but everything else is the same. Using the mid point formula for elasticity, the income elasticity of demand is 1. (4 Points)

2.3 Dinners out are a normal good. (2 Points)

Part III (40 Points)

1. Researchers at Beijing Jiaotong University have studied the the price elasticity of demand for Beijing subway. Read [their paper](#) and discuss (20 Points)

- their main findings regarding the elasticity of demand and the “law of demand” for Beijing subway
- why you would not publish their paper¹

2. Read Chapters IV of “New Ideas from Dead Economists” and summarize the main ideas and contributions of David Ricardo (20 Points)

¹if you are the journal’s editor