

ECON 501 - EXERCISE 1

- 1) Suppose there is a linear downward-sloping demand curve and a linear upward-sloping supply curve for a good. The price of a substitute good increases and the price of an input to production also increases. Graph the original demand and supply curves, and the curves after the substitute good and input prices increase. How will the equilibrium price change after the substitute and input prices increase?
- 2) What happens to the equilibrium price and quantity of coffee when there is a leftward shift of the supply curve for tea? Explain.
- 3) Suppose the market for a good is expressed as follows:

$$\text{Inverse demand: } P = 200 - 2Q$$

$$\text{Inverse supply: } P = 2Q$$

What is the equilibrium if the government imposes a supply quota of 75 units?

What is the equilibrium if the government imposes a supply quota of 25 units?

- 4) Suppose the market for potatoes can be expressed as follows:

$$\text{Supply: } Q^S = -20 + 10p$$

$$\text{Demand: } Q^D = 400 - 20p$$

Suppose the government restricts the quantity to 100 units. What will be the price of potatoes?

- 5) Assume the market demand for wheat may be written as

$$Q = 45 - 2p + 0.3Y + 1pb$$

where Y refers to income and pb refers to the price of barley. Assuming that wheat and barley both sell for \$1, and income is \$20, calculate the price elasticity, cross price elasticity and income elasticity for wheat.

For the following, please answer "True" or "False" and explain why.

- 6) If a linear supply curve has a zero intercept, the elasticity of supply is always unitary.

- 7) Suppose the market for grass seed can be expressed as

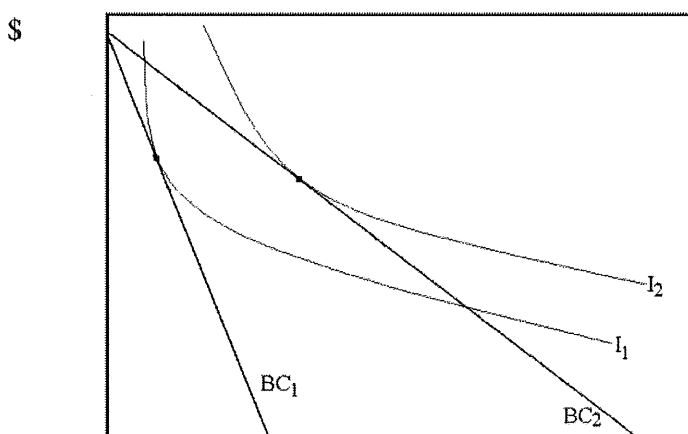
$$\text{Demand: } Q^D = 200 - 5p$$

$$\text{Supply: } Q^S = 40 + 5p$$

If the government collects a \$5 specific tax from sellers, how much will the quantity demanded change from the amount demanded before the tax? What price will consumers pay after the tax? What price will sellers receive after the tax? What is the tax revenue?

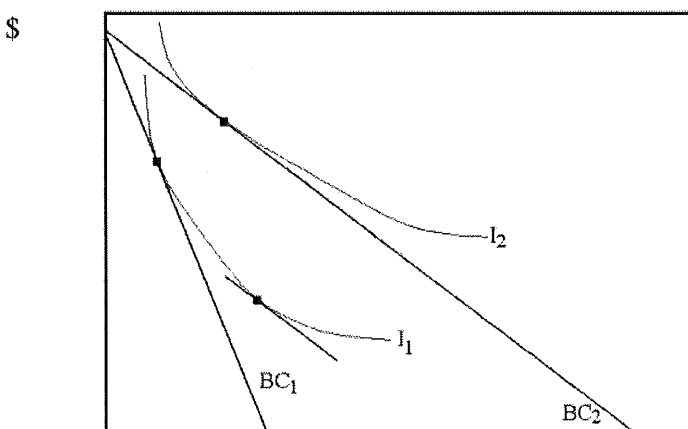
- 8) Lisa consumes only pizzas and burritos. In equilibrium, her marginal utility of pizza is 20 and her marginal utility of a burrito is 10. The price of a pizza is \$4. What is the price of a burrito?

- 9) Lisa consumes only pizzas (P) and burritos (B). Her utility function is $U = P^{0.5} B^{0.5}$. The price of per pizza is \$10 and the price per burrito is \$5. In equilibrium, Lisa consumes 4 pizzas. Using Lisa's utility function, calculate how many burritos she consumes.
- 10) Suppose Joe's utility for lobster (L) and soda (S) can be represented as $U = L^{0.5} S^{0.5}$. Joe walks into a restaurant with \$72. Lobsters cost \$18 each and sodas cost \$2 each. How much lobster and soda will Joe consume if he intends to spend all his money? (There are no tax and no tips.)
- 11) The diagram below depicts the change in optimal consumption bundles for Marty when the price of shotgun shells fall. Decompose the change into the income and substitution effects.



Shotgun Shells

- 12) Margaret's optimal consumption is shown in the diagram below for two different prices of Hy-Vee Cola. Decompose the change in Hy-Vee Cola consumption into income and substitution effects. Do the effects work in opposite directions?



Hy-Vee Cola

13) Suppose the typical consumer only purchases food and clothing, and her utility can be expressed as $U = F * C$. Currently, food costs \$5 per unit and clothing costs \$2 per unit. Her income is \$70. If the price of food increases to \$6, compare the resulting CPI adjustment (Laspeyres price index) with a true cost of living adjustment. i.e. calculate both CPI adjustment and COLA.

