Do **all 5** questions. All count equally

1. What are **all** the allocations on the contract curve for the following 2–person 2–good exchange economy?

Person 1's preferences can be represented by the utility function

$$u(x_1, y_1) = x_1 y_1$$

Person 2's preferences can be represented by the utility function

$$U(x_2, y_2) = 160x_2 - (x_2)^2 + 160y_2$$

The economy's total endowment of good X is 40, and the economy's total endowment of good Y is 60.

2. What is the competitive equilibrium allocation for the following 2–million–person, 2–good exchange economy, in which the government levies an excise tax?

There are 2 million people in the economy, each of whom has preferences which can be represented by the utility function

$$u(x_i, y_i) = x_i + 36 \ln y_i$$

where x_i is person i's food consumption, y_i is person i's clothing consumption, and "ln" refers to the natural logarithm function. (Recall that the derivative of $\ln y_i$ with respect to y_i is $1/y_i$.)

One million of the people have an endowment of 72 units of food, and no endowment of clothing. The other one million people each have an endowment of 72 units of clothing and no food.

The government taxes sales of clothing in the following fashion. Each time any person sells any clothing, the government confiscates half the clothing that she sells. The government than takes all the confiscated clothing, and divides it up equally among all 2 million people.

3. What is the competitive equilibrium to an economy which is exactly the same as the one described in question #2, if the government did not levy any taxes, or redistribute any goods?

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4. What is the incidence of a tax of \$6 per shirt in a perfectly competitive market for shirts, if the supply curve in the market has the equation

$$Q^s = 2p_s$$

and the demand curve has the equation

$$Q^D = \frac{288}{P^D}$$

where p_s is the price received by sellers, P^D is the price paid by buyers, Q^s is the quantity supplied, and Q^D is the quantity demanded?

5. What would the incidence of a tax of \$100 on each laptop computer sold in Canada, if laptops were produced by a five–firm oligopoly, in which the firms colluded to fix prices so as to maximize the total profits of all the firms, if each firm could produce laptops (in unlimited quantities) at a price of \$1500 each, and if the total quantity Q^D of laptops demanded in Canada was

$$Q^D = 1000000 - 200P^D$$

where P^D was the price paid by consumers?