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Brown ID _____

Economics 111 S01: Intermediate Microeconomics
Spring 2009
Midterm 2

You have 1 hour and 20 minutes. Only clarifying questions are allowed. Do not cheat. Do not panic. Enjoy the exam.

Questions 1 to 5 are multiple choice. Circle the correct answer. (5 points each correct answer).

1. If the minimum cost function is $C(y) = y^2$, the minimum price at which the firm is willing to operate in the long run is:

- a. 0.
- b. 5.
- c. 10.
- d. 20.
- e. none of the above.

2. The production function $y = 2x_1 + x_2$, displays:

- a. decreasing returns to scale.
- b. constant returns to scale.
- c. increasing returns to scale.
- d. different returns to scale depending on (x_1, x_2) .
- e. none of the above.

3. If the production function is $y = \min\{x_1^2, x_2^2\}$ and the prices of inputs are w_1 and w_2 , the minimum cost function is:

- a. $C(w_1, w_2, y) = \frac{1}{2}(w_1 + w_2)y$.
- b. $C(w_1, w_2, y) = (w_1 + w_2)y$.
- c. $C(w_1, w_2, y) = \sqrt{(w_1 + w_2)}y$.
- d. $C(w_1, w_2, y) = (w_1 + w_2)\sqrt{y}$.
- e. $C(w_1, w_2, y) = (w_1 + w_2)y^2$.

4. Armando and Bernardo consume two goods. They trade with each other, there is no production and the total endowments of both goods are equal. Armando's utility function is $U_A = x_{A1}x_{A2}$ and Bernardo's is $U_B = x_{B1}x_{B2}$. In the Edgeworth Box, the set of Pareto efficient allocations is:

- a. both diagonals.
- b. the entire box.
- c. the main diagonal.
- d. the right and bottom edges of the box.
- e. none of the above.

5. The Armchair Economist says that "taxes are bad because they can be avoided." The reason is that:

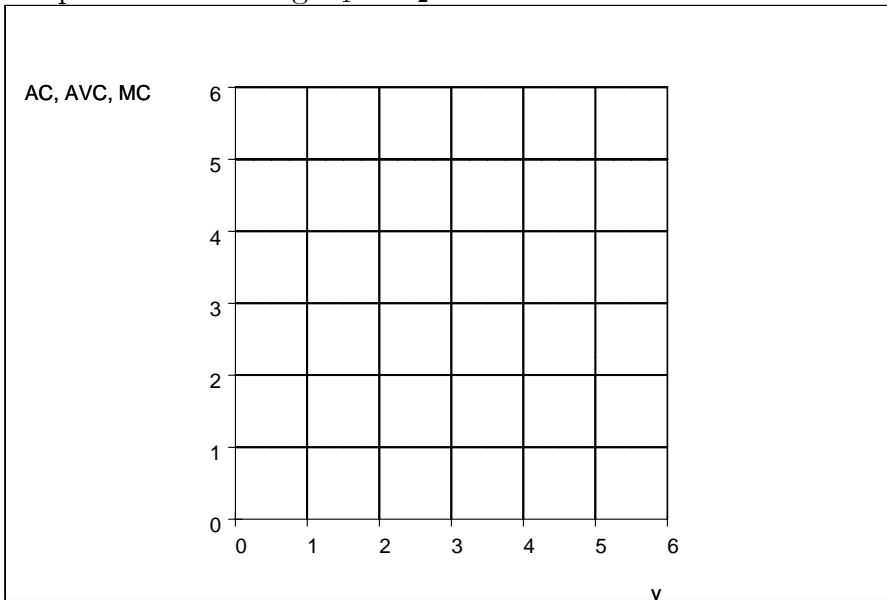
- a. The avoidance of taxes causes economic losses that are not offset by any gains.
- b. Taxes are important for the functioning of government.
- c. Taxes violate the First Welfare theorem.
- d. It is not fun to pay taxes.
- e. Avoiding taxes makes people feel guilty.

6. (25 points) A firm produces output following this production function $f(x) = x_1^{\frac{1}{3}}x_2^{\frac{1}{3}}$. In addition, to operate the firm has to pay a fixed cost of 1.

a. Find the minimum cost function. (Don't forget fixed costs)

b. Find the average total cost, the average variable cost and marginal cost functions.

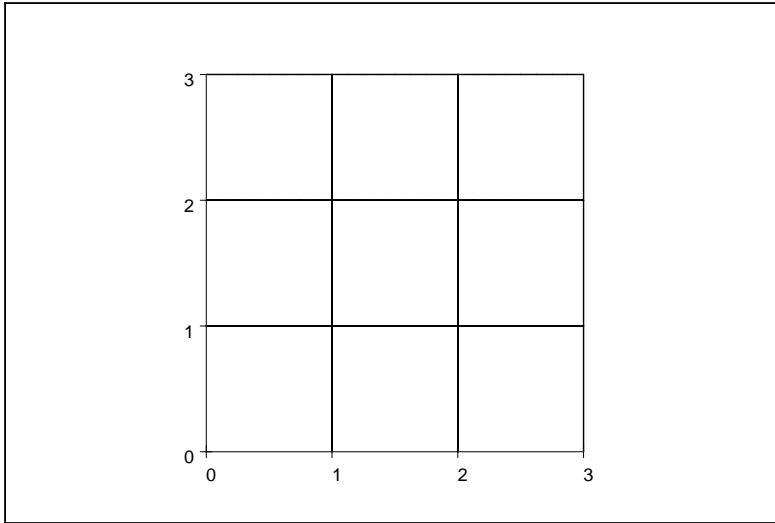
Graph them assuming $w_1 = w_2 = 1$.



c. Find the long run and short run supply functions and graph them in the figure in point b.

7. (25 points) Consider a world with two agents: A and B. The utility of A is $U_A = x_{A1}x_{A2}$ and the utility of B is $U_B = x_{B1} + x_{B2}$. The initial endowments are $\omega_A = (2, 1)$ and $\omega_B = (1, 2)$.

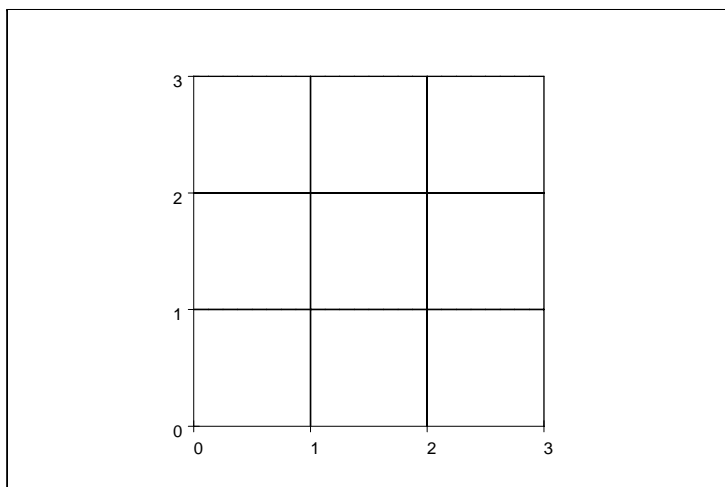
a. In the following figure draw the Edgeworth Box labeling all axis and draw the initial endowment and the indifference curves that go through it.



b. Find the Contract Curve. Draw the Contract Curve (the set of Pareto efficient allocations) in the Edgeworth Box of point a.

c. Find the competitive equilibrium price p_1^* (assume that $p_2 = 1$). Find the equilibrium allocation $(x_{A1}^*, x_{A2}^*, x_{B1}^*$ and $x_{B2}^*)$. (Hint: this may be tricky if you focus on the formulas from demand functions. It may be easier to use the First Welfare Theorem).

d. In the following figure draw the initial endowments, the equilibrium budget line(s) and the equilibrium consumption bundles. (Label each of them in the graph).

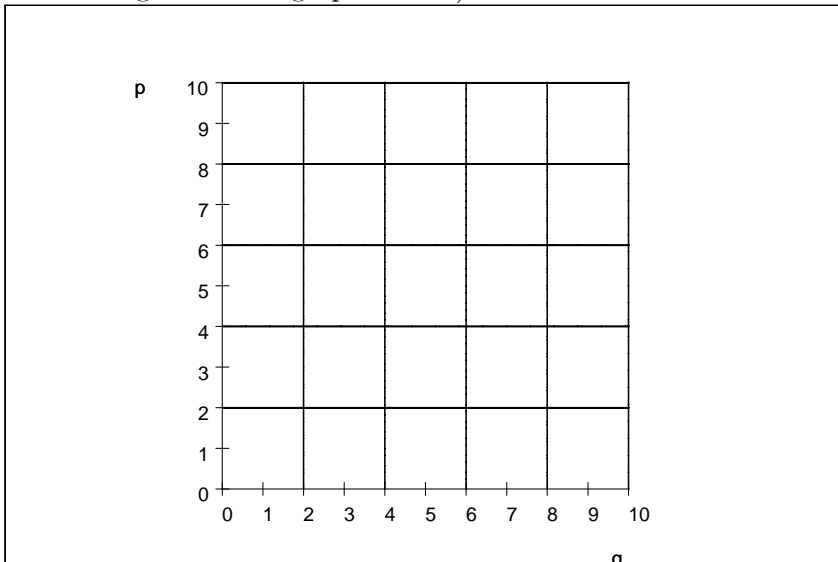


8. (25 points) Americans' demand for widgets is: $D(p) = 10 - p$. Widgets come from both foreign and US producers. Their supplies functions are $S_F(p) = p - 1$ and $S_{US}(p) = p - 1$ where p is the price of widgets in the US (for simplicity we assume that widgets are only consumed in the US).

a. Find the total supply function in the US if foreign producers are allowed to sell in the US.

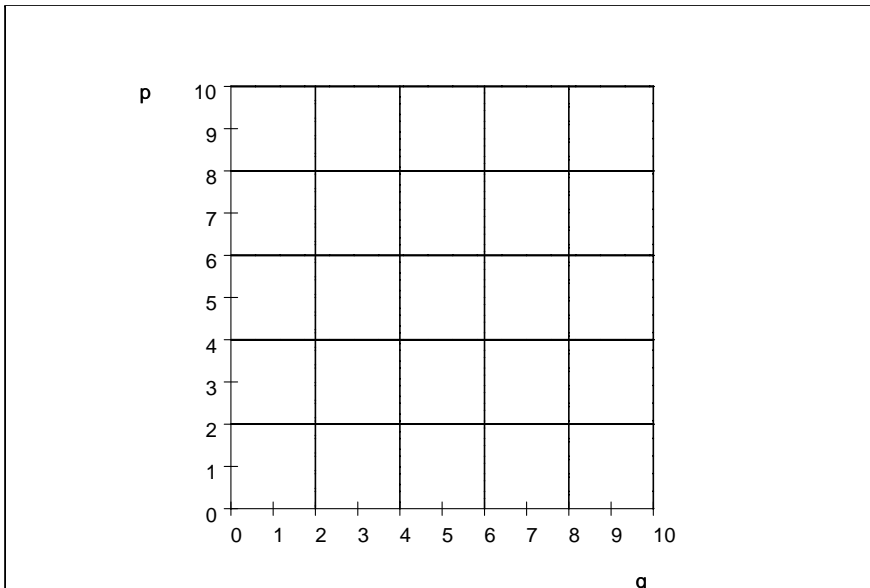
b. In that case, what is the perfect competitive equilibrium price and quantity?

c. What is the consumer surplus, foreign producer surplus and US producer surplus? Show all these graphically. (Hint: To graph the surpluses of Canadian and US producers first find the total producer surplus, then draw the US supply function to find the US producers surplus, the difference goes to foreign producers).



d. What would be the equilibrium if foreign companies are not allowed to sell widgets in the US?

e. What is the consumer surplus, foreign producer surplus, US producer surplus and deadweight loss? Show all these graphically. Who wins and who losses from the ban? Is the ban beneficial for the US as a whole?



Have a nice spring-break!!!