

Economics 3550.001, 3550.003
Intermediate Microeconomics
Professor Rous
Final Exam
May 5, 2003

Name _____

Clearly label all graphs for full credit and please write legibly; I cannot grade what I cannot read.

The point value of each question is in parentheses.

1. (5) When Supply decreases, ceteris paribus:
 - a. **price increases, demand decreases.**
 - b. price increases, quantity demanded decreases.
 - c. price decreases, demand increases.
 - d. price decreases, quantity demanded increases.

2. (5) Say the government is considering increasing the social security tax by \$1 per hour worked. So that the burden of the tax is fairly shared by workers and employers, the government should
 - a. have the workers pay the tax if the supply of labor is more elastic than demand for labor.
 - b. have the workers pay the tax if the supply of labor is more inelastic than demand for labor.
 - c. have the workers pay \$.50 and employers pay \$.50.
 - d. **collect the tax in whatever way is easiest since the economic incidence of a tax does not depend on who pays the tax.**

3. (5) If the demand for Nike Air Jordan's can be expressed with the following equation:
 $P = 300 - .25Q$, then if the price is \$100, the price elasticity of demand is
_____.**.5**_____. And the firm's MR would be ____-100____.

Calculating MR from elasticity and price is not something we get to every semester.

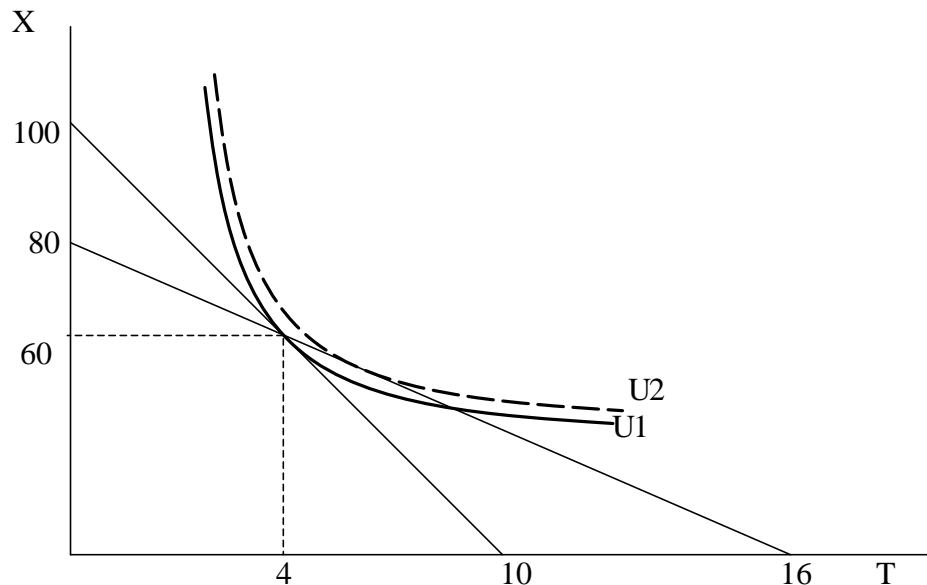
4. (6) Assume you are about to graduate and you have several family members that are interested in attending the ceremony. You only have \$100 to spend this month (no one will lend you any money) and you are expected to buy the tickets to graduation.

So, this month you will only consume tickets, T , and a composite commodity, X .

The price of tickets is \$10 and you plan on buying 4 tickets (the price of the composite commodity, X , is \$1).

But the university makes a special offer. You may join the Alumni Association for \$20, and then you can buy tickets for \$5 each (note that joining the Alumni Association holds absolutely no interest to you – it provides no extra utility).

Verbally and graphically explain whether you will join the Alumni Association to get the cheaper tickets.



You start with $Q_t = 4$ and $Q_x = 60$ and you get Utility = U_1 .

With the special deal, you can increase consumption of tickets, consume less X and get to U_2 .

5. (14) The law of demand states that price and quantity are always inversely related. However, as we have learned this semester, it is theoretically possible for demand to be upward sloping.

Suppose Ella consumes both TV dinners and a composite commodity. Her income is \$200, the price of the composite commodity is \$1 and the price of TV dinners is \$4. At first, she consumes 30 TV Dinners. Assume the price of TV Dinners then falls to \$2.

Using consumer choice theory, derive an upward sloping demand curve for TV Dinners using the information above as a starting point. Carefully explain the conditions that must hold for a demand curve to slope upward.

You MUST graphically show the direction and magnitude of the substitution and income effects. Clearly label all relevant parts of your diagram(s).

This is the standard Giffen good situation. I would expect you to draw the graph using the information provided, and then show how, when the price of TV dinners falls, the substitution effect is positive but the income effect is so negative that overall consumption of TV dinners will actually rise. Then show the demand for TV dinners sloping upwards with a higher quantity demanded at a price of 2 than 4.

6.(10) Brittany's Auto Mart (a junk yard) currently has total revenue of \$120,000, TVC of \$100,000 and TFC of \$50,000.

What is Brittany's profit? What is her producer surplus? Why are the two different?

As Brittany's economist friend, your advice is, in the **short run**, to

- continue to produce, or,
- shut down, or,
- exit the industry

Briefly explain your choice.

Her profit is \$-30,000, her producer surplus is \$20,000. The difference is that profit is $TR - TC$ but producer surplus is $TR - VC$. Conceptually, producer surplus is how much better off the firm is compared to shutting down whereas profit is how well off the firm is to exiting the industry.

Since producer surplus is positive (and the loss is less than FC), she should stay in business in the short run, but exit in the long run.

Before Brittany can decide, her accountant finds an accounting error. Her fixed costs are actually \$135,000. If it does, how does your advice change and why?

No change in the advice. Yes, her profit is now - \$115,000, but her FC is \$135,000 and producer surplus is still \$20,000. She is still better off producing, at a loss, than shutting down.

7. Sandy's Dry Cleaning currently uses 4 units of capital and 6 laborers. The price of capital is \$200 per day and the price of labor is \$150 per day. With this input mix in the short run, the $MP_K = 50$ and the $MP_L = 25$ and she is producing a total of 400 units of output per day.
- a. (6) Draw the isoquant and isocost curves that match the situation outlined above. Is she currently on her expansion path? How do you know?

To minimize cost, the MRTS must = PL/PK .

$MRTS = MPL/MPK$.

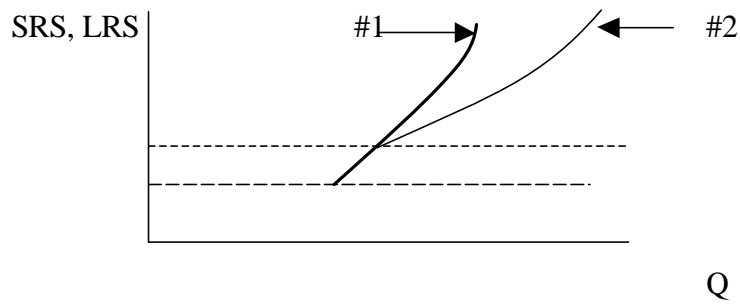
In the current situation, $MRTS = .5 < PL/PK = 3/4$.

IF you draw it out (with L on the x-axis, you see that the isoquant is flatter than the isocost curve. Therefore the firm should fire some labor and hire some more capital.

- b. (4) Assume Sandy has hired you as her economic advisor. Explain to her how she can lower her cost of producing 400 units by changing her input mix.

If you fire one laborer, you save \$150. Since the MRTS is .5, you only need to hire .5K to replace the laborer and continue to produce $Q = 400$. .5 units of K will cost \$100. Therefore, the firm will save \$50 by making the trade.

8. (6) Explain the differences between short run firm supply and long run firm supply drawn below. (Yes, you first need to identify which curve is which).



- #1 is SR firm supply. It starts at a lower level because it is the MC curve above AVC and is steeper because MC is higher in the short run.*
- #2 is the LR firm supply curve. It is flatter because MC is lower in the LR (because the firms can stay on the expansion path) and starts at a higher level because the low point is the break-even price (low point of ATC) which is always higher than AVC.*

9. (8) For this question, assume airlines operate in a competitive market. Most analysts have been saying that the next year will see quite a bit of restructuring in the airline industry (which means many of the current airlines will leave the market within a year). This consensus is based on the observation that every airline (except Southwest Airlines) has a negative accounting profit.

Two things have contributed to the airline's problems. First, new security costs have increased variable cost. Second, demand has fallen in the industry and may not increase again for several years.

Based on these factors, and assuming the airline industry is an increasing cost industry, Analyze the situation to determine whether it is possible to determine if the price of an average airline ticket will be higher or lower in a year (assuming the analysts are correct that one year is enough time for a long-run adjustment to take place)?

Basically, start with the firm and market graph such that the market price is below breakeven but above AVC. Say the current price of a ticket is \$200 and the break-even price is \$300. As firms exit, the price will rise AND (because it is an increasing cost industry) costs will fall. Therefore the new breakeven price will be between \$200 and \$300.

10. (12). Assume the Yacht market is a competitive, constant cost industry in a long run equilibrium situation where demand and supply can be can be illustrated by the following:

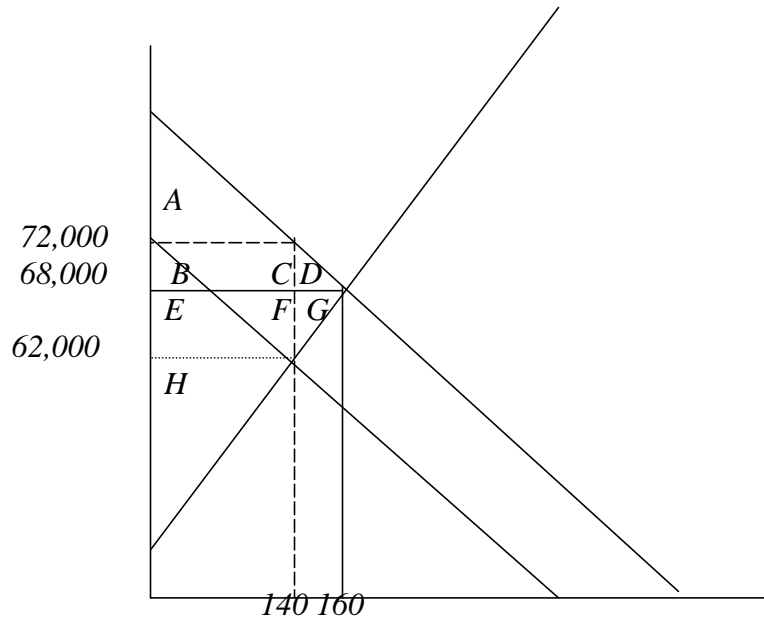
Demand: $P = 100,000 - 200Q$

Supply: $P = 20,000 + 300Q$.

Assume the government places a \$10,000 sales tax on yachts.

a. (6) Graph the short run situation. Using the supply and demand functions above, determine the short run price (for consumers and producers) and quantity sold in the market after the tax is imposed.

b. (6) Use the “Efficiency Criterion” to evaluate the tax.



Pre-tax market price is \$68,000 and pre-tax Q is 160.

Post-tax market price is \$62,000 (but consumers pay and extra \$10,000 with the tax) and post-tax q is 140.

Pretax CS = A+B+C+D

Pretax PS = E+F+G+H

Post tax CS = A

Post tax PS = H

Gov. revenue = B+C+E+F

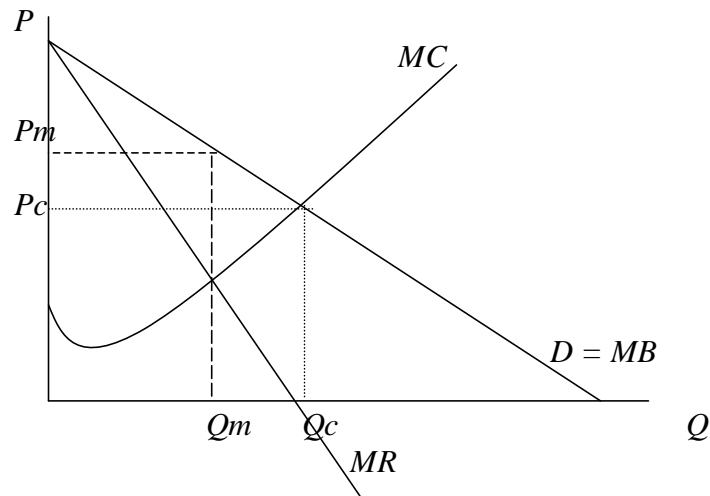
Winners from the tax are willing to pay up to B+C+E+F for the tax.

Losers (consumers and producers) are willing to pay B+C+D+E+F+G to not have the tax.

New societal loss is the difference between the two. Which is D+G if subtract B+C+E+F from B+C+D+E+F. That difference is deadweight loss.

11. For reasons that have been lost to the fog of history, the Widget industry only contains one firm, the Gates Widget Company (which is not a Natural Monopoly and does not benefit from any increasing returns to scale because of its size). The U.S. Justice Department is contemplating breaking the firm into 1000 smaller firms that would all be producing an identical product.

- a. (8) The Justice Department has hired you to advise them on this issue. Verbally and graphically explain the monopolist's behavior and whether a break-up would result in a more or less efficient outcome.



A breakup would increase efficiency. The monopolist will charge a price of P_m , higher than the competitive market price of P_c , and sell Q_m , lower than the competitive Q or Q_c . The competitive outcome is the outcome where $MC = MB$ for the last unit produced so there is no deadweight loss. Breaking up the industry would increase economic surplus and efficiency.

- b. (4) The Gates Widget Company has suggested that instead of being broken up, that it be allowed to collect detailed financial information on all its customers and then charge each customer a price according to its willingness-to-pay. How does this proposal compare to the Justice Department option in terms of efficiency and consumer and producer well-being?

In this case, the firm would be able to perfectly price discriminate and the firm's MR curve would be the same as the demand curve. To max profit, the firm would produce a quantity where $MR = MC$ and that would be where MC intersects demand. If they produce that level of output, they are producing the level that a competitive market would produce, which is efficient. Economic surplus is maximized, however, the firm captures all the consumer surplus (there is no consumer surplus).

Answer ONE of the following two questions. Do not answer both!

12. (7) The beleaguered airline industry has been much in the news of late. In fact, Democratic Senator Windy Bag from West Virginia has proclaimed that “The airline industry is this country’s engine of growth. If airlines start going bankrupt, thousands of jobs will be lost. The resulting loss in income will cause severe harm to other industries both that rely on the airline industry directly, like the air-sickness bag manufacturers, and indirectly, like grocery stores and department stores where airline industry workers buy their food and clothing. By having congress allocate \$500 billion to subsidize the airline industry, we will see the country on the road to economic recovery and expansion”

What would Hazlitt say about this quote?

13. (7) My mother is certain that American made cars are inferior to foreign made cars (that is, for the same price, Foreign made cars offer superior quality and performance). However, she says that she is willing to get less for her money by only buying American made cars because this keeps American’s employed and the American economy strong (employed auto workers buy goods in America which helps maintain other American industries etc.). Now that you have read Hazlitt, what would you say to my mother if this topic came up?