

EC101 – CONTEMPORARY ECONOMIC ISSUES

Homework#2

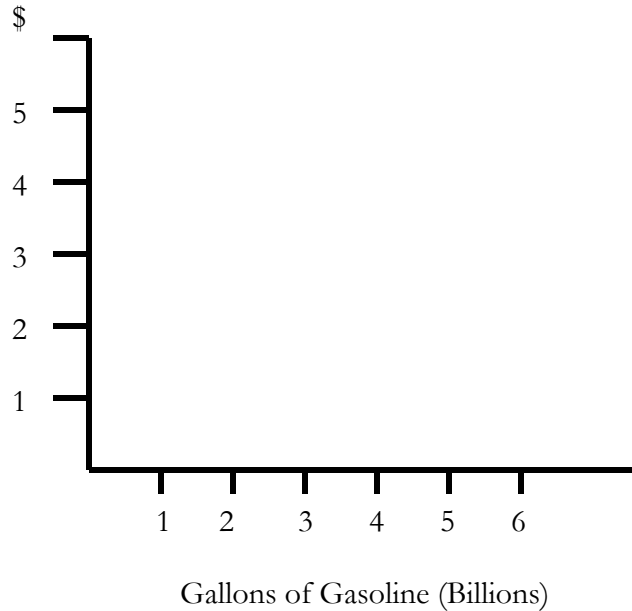
Due in Discussion Groups, Friday, January 26, 2007

- 1.) Consider the act of consuming gasoline. Assume that the marginal cost of gasoline is a constant \$2 per gallon. In other words, consumers can buy as much as they want at that price. Now assume the benefits received by consumers (in aggregate) is given by the following table:

Quantity (billions of gallons)	Total Benefit (billions of \$)	Marginal Benefit <u>per Gallon</u>
0	\$0	None
1	\$5	\$5
2	\$10	_____
3	\$14	_____
4	\$17	_____
5	\$19	_____
6	\$20	_____

- a. According to the table, the marginal benefit of the first billion gallons of gas is \$5 per gallon (an additional \$5bill in benefits for the additional 1 billion gallons). Complete the remaining entries in the table.
- b. Recalling that the marginal cost of gas is \$2 per gallon, what is the optimal quantity of gasoline purchased? Explain briefly.

- c. Using the graph below, derive marginal cost and marginal benefit curves.



- d. Sometimes the private costs and the social costs of an activity differ. For example, the burning of gasoline creates pollution, which is a cost on society that is not recognized by the private user (we call this a *negative externality*). Suppose that each gallon of gasoline consumed creates \$1 of cost on society. The combination of this cost and the private cost is the marginal social cost per gallon. Draw the marginal social cost curve for gasoline in your graph above.
- e. Now, considering the marginal social cost of gasoline, what is the optimal level of gasoline consumption? Why does this answer differ from that of part b above?
- f. Using your results from above, in general, will private individuals tend to overconsume or underconsume resources that yield a negative externality?