

Principles of Microeconomics (Econ 002)
Drake University, Spring 2001
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MIDTERM EXAMINATION #3: VERSION B
“Choices Underlying Supply and Demand”
April 6, 2001

INSTRUCTIONS: This exam is closed-book, closed-notes, but calculators are permitted. Numerical answers, if rounded, must be correct to at least 3 significant digits. Point values for each question are noted in brackets. Maximum total points are 100.

I. Multiple choice: Circle the one best answer to each question. [2 pts each: 8 pts total]

- (1) The price of a good is approximately equal to
 - a. the value to the consumer of the first unit purchased.
 - b. the average value to the consumer of all units purchased.
 - c. the value to the consumer of the last unit purchased.
 - d. cannot be determined from the information given.

- (2) To maximize profits (or minimize losses) in the short run, a firm should set its quantity of output so that its marginal revenue equals its
 - a. short-run average variable cost.
 - b. short-run marginal cost.
 - c. short-run average total cost.
 - d. short-run average fixed cost.

- (3) A free market allocates gains from trade so that
 - a. buyers enjoy greater gains from trade than sellers.
 - b. sellers enjoy greater gains from trade than buyers.
 - c. buyers and sellers benefit enjoy equal gains from trade.
 - d. cannot be determined from the information given.

- (4) International trade will increase a country's social welfare if
 - a. the world price is lower than the domestic price.
 - b. the world price is higher than the domestic price.
 - c. neither (a) nor (b).
 - d. either (a) or (b).

II. Problems: Insert your answer to each question in the box provided. Feel free to use the margins for scratch work—only the answers in the boxes will be graded. Work carefully—partial credit is not normally given for questions in this section.

(1) [Consumer choice and demand: 10 pts] The indifference curves in the graph below represent Jan’s preferences for energy and other goods.



- a. Would Jan rather have 500 units of energy and 500 units of other goods, or 200 units of energy and 800 units of other goods?
- b. Would Jan rather have 1000 units of energy and 400 units of other goods, or 700 units of energy and 700 units of other goods?

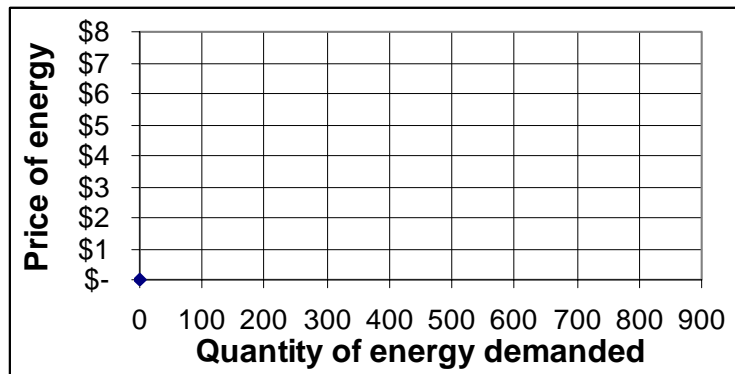
units of energy &
 units of energy &

units of other goods
 units of other goods

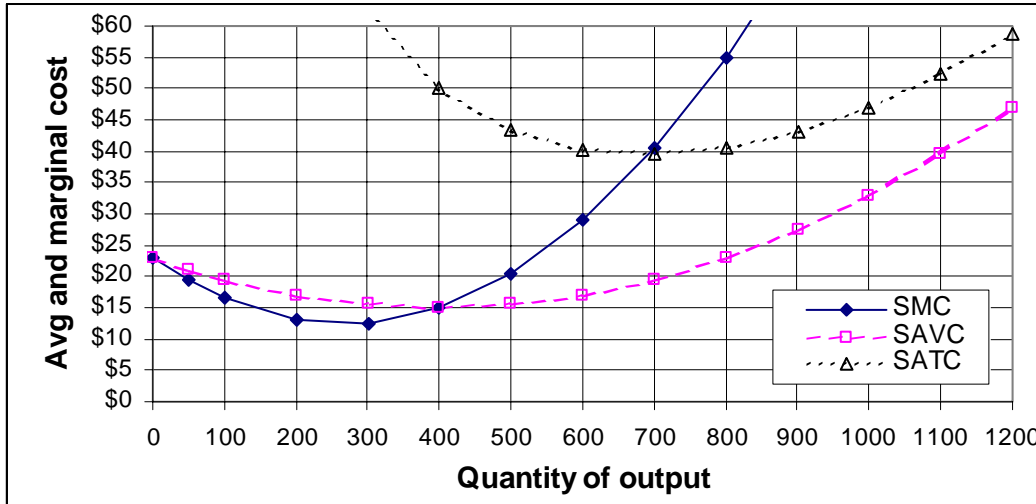
Suppose Jan has a budget of \$1200 to spend on units of energy and other goods. The price of other goods is \$1. [Hint: To answer the questions below, carefully use a straightedge to draw Jan’s alternative budget lines.]

- c. How much energy will Jan buy if the price of energy is \$1?
- d. How much energy will Jan buy if the price of energy is \$6?
- e. Plot two points on Jan’s demand curve for energy, and sketch her demand curve below

	units of energy
	units of energy



(2) [Short-run cost curves and supply: 20 pts] Acme Bicycle Pump Company is a small firm in a big market, and therefore takes its output price as given. In the short run, Acme faces weekly cost curves as shown in the following diagram. Here, SMC denotes short-run marginal cost, SAVC denotes short-run average variable cost, and SATC denotes short-run average total cost.



- What is Acme's break-even price—that is, the lowest price at which the company can avoid losses? (Give an answer to the nearest five dollars.)
- What is Acme's shut-down price—that is, the lowest price at which it will remain in operation in the short run? (Give an answer to the nearest five dollars.)
- Suppose the price of bicycle pumps is \$55. How many pumps will Acme produce?
- Will Acme experience *profits or losses* at a price of \$55?
- Suppose the price of pumps is \$20. How many pumps will Acme produce?
- Will Acme experience *profits or losses* at a price of \$20?
- Suppose the price of pumps is \$10. How many pumps will Acme produce?
- Will Acme experience *profits or losses* at a price of \$10?
- What is the smallest positive number of pumps that Acme will ever produce?
- What are Acme's fixed costs, to the nearest thousand dollars?

\$	
\$	
	pumps
	pumps
	pumps
\$	thousand

(3) [Discounting: 4 pts] Answer the following questions, assuming the interest rate is **5%**. Round to the nearest whole dollar.

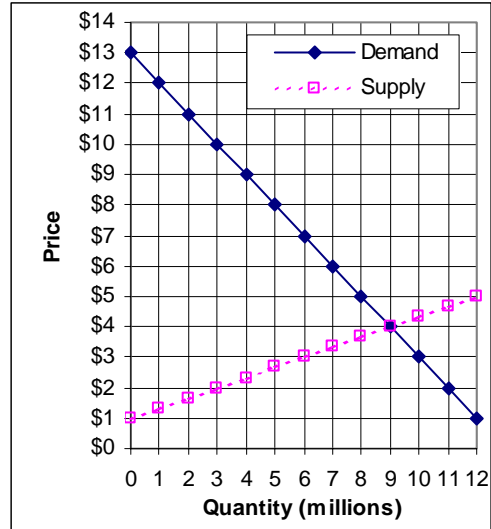
- Suppose \$100 is to be received two years from today and \$200 is to be received 3 years from today. Compute the present discounted value of this stream of payments, to the nearest whole dollar.
- Suppose a firm is expected to enjoy \$10 million in profits every year, perpetually, beginning a year from today. Compute the value of the firm.

\$	
\$	million

(4) [Welfare effects of quota: 22 pts] The following diagram shows the market for staplers. First, consider the market without market controls.

- Compute the equilibrium quantity.
- Compute the equilibrium price.
- Compute total consumer surplus.
- Compute total producer surplus.

	million
\$	
\$	million
\$	million



Suppose the government places a quota on **buyers**. Buyers are only permitted to buy 3 million staplers. Assume optimistically that the buyers who value staplers the most obtain the quota rights to buy.

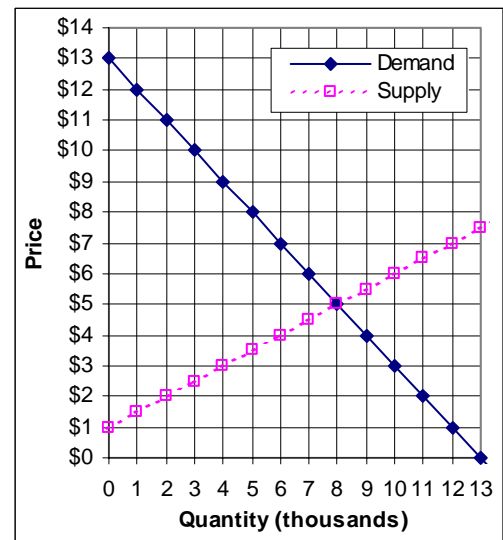
- Compute the market price of staplers with the quota on buyers.
- Does consumer surplus *increase or decrease* because of the quota on buyers?
- By how much?
- Does producer surplus *increase or decrease* because of the quota?
- By how much?
- Does total social welfare for this country *increase or decrease* because of the quota?
- By how much?

\$	
\$	million
\$	million
\$	million

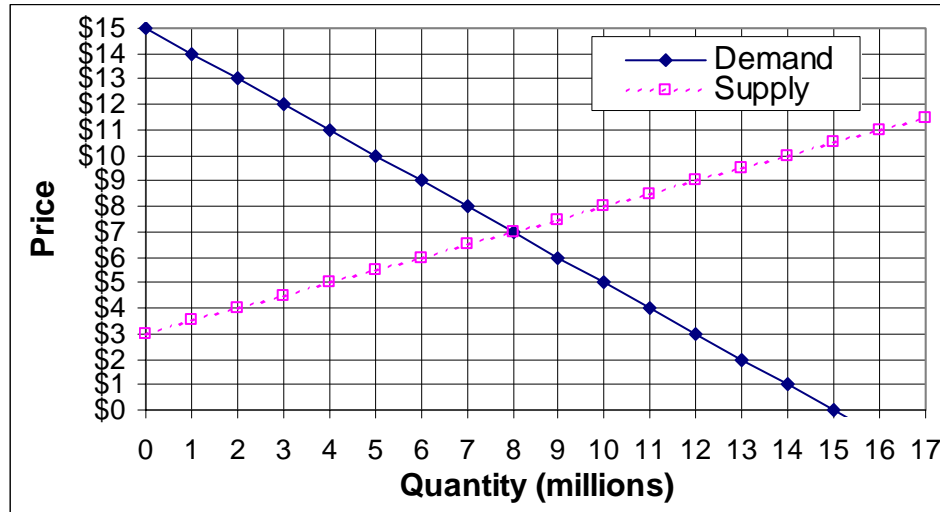
(5) [Welfare effects of subsidy: 16 pts] Demand and supply of ping-pong paddles are shown in the following diagram. Suppose the government offers a subsidy of \$3 per ping-pong paddle.

- Compute the quantity traded with the subsidy.
- Does consumer surplus *increase or decrease* because of the subsidy?
- By how much?
- Does producer surplus *increase or decrease* because of the subsidy?
- By how much?
- Compute the direct cost of the subsidy program to the government. That is, compute how much the government should budget for this subsidy program.
- Does total social welfare for this country *increase or decrease* because of the subsidy?
- By how much?

	thousand
\$	thousand
\$	thousand
\$	thousand



(6) [Welfare effects of international trade: 16 pts] Domestic supply and demand for a type of automobile part are shown in the following diagram.



At first, international trade is not permitted. Then this industry is opened to international trade and the world price of this part turns out to be **\$11**.

- Will this country now *export or import* this kind of auto part?
- How many?
- Does consumer surplus *increase or decrease* because of international trade?
- By how much?
- Does producer surplus *increase or decrease* because of international trade?
- By how much?
- Does total social welfare for this country *increase or decrease* because of international trade?
- By how much?

	million
\$	million
\$	million
\$	million

III. Critical thinking: Write a one-paragraph essay answering either question (1) or question (2) below, but not both. Full credit requires correct economic reasoning, legible writing, good grammar including complete sentences, and accurate spelling. [4 pts]

- Consider the following statement. “American trade policy should put American businesses and workers first. Imports should be banned if they compete against products made by Americans.” Do you agree or disagree? Explain your reasoning.
- Consider the following statement. “Low-wage workers deserve a break. A good way to help them would be to raise the minimum wage to \$9 per hour now.” Do you agree or disagree? Explain your reasoning.

Which question are you answering, (1) or (2)? _____. Please write your answer on the back of this sheet.

[end of exam]