

Practice Exam Two

Name _____

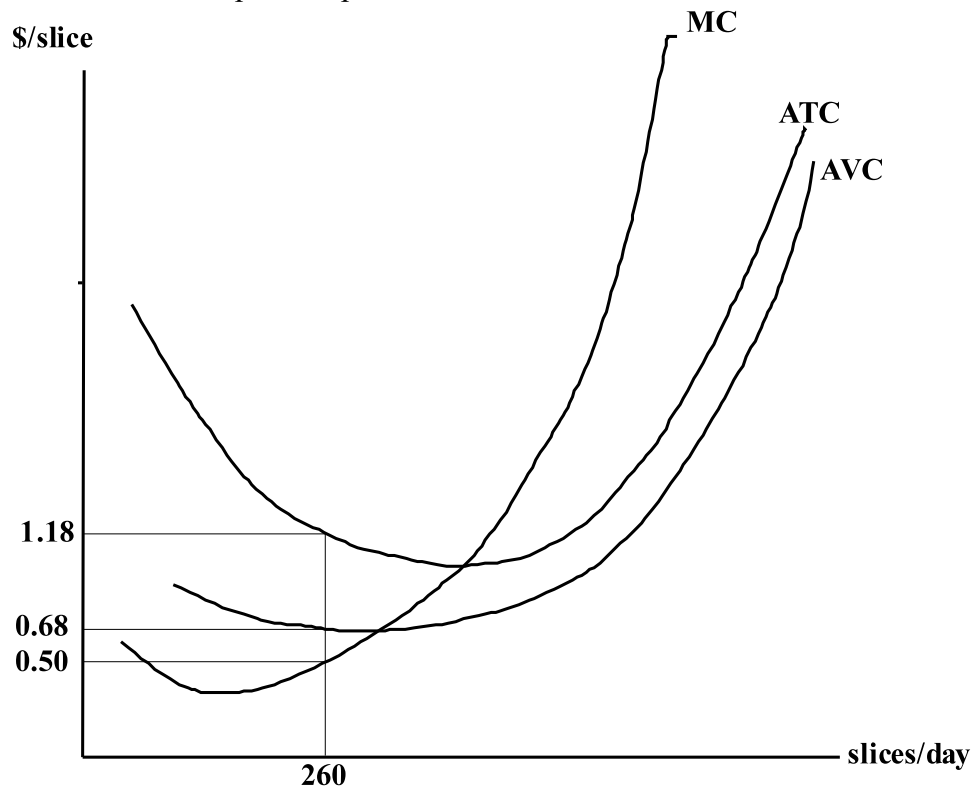
Chapter 6

1. The supply curves for the only two firms in a competitive industry are $P = 2 Q_1$ and $P = 2 + Q_2$, where Q_1 is the output of firm 1 and Q_2 is the output of firm 2. **Graph** the supply curve for each firm. What is the market supply curve for this industry?

2. A price-taking firm makes air conditioners. Its total costs appear below. The market price for air conditioners is \$120. How many air conditioners should the firm produce per day? What will be its daily profit?

| Air conditioners per day | Total cost (\$ per day) |
|--------------------------|-------------------------|
| 1 | 100 |
| 2 | 150 |
| 3 | 220 |
| 4 | 310 |
| 5 | 405 |
| 6 | 510 |
| 7 | 650 |
| 8 | 800 |

3. What is the profit-maximizing level of output and how much daily profit will the producer below earn if the price of pizza is \$0.50/slice?



Chapter 7

4. Suppose the flight between Houston and College Station can hold 36 passengers but the airline routinely sells up to 40 tickets, assuming some passengers will not show up. Discuss why a policy of offering compensation (such as a travel voucher) to induce some passengers to wait for a later flight is more efficient than turning away the last to arrive when the flight is oversold.

5. Suppose the demand for used textbooks is $P = 90 - Q$ and the supply of used textbooks is $P = 2Q$ at Texas A&M (where Q is measured in 10,000s per semester).

a. **Graph** the market for used textbooks. What is the equilibrium price and quantity?

b. Calculate and **graph** (above) consumer surplus, producer surplus, and total economic surplus. What is the most that consumers and producers together would be willing to pay for the right to be able to buy and sell used textbooks?

6. Refer to Problem 6. Suppose a price ceiling of \$50 is placed on the market for used textbooks.

a. Calculate the weekly shortage of used textbooks that will result from this policy.

b. Calculate and **graph** consumer surplus, producer surplus, and total economic surplus. Would producer support the price ceiling? Would consumers support the price ceiling?

c. Calculate and **graph** the total economic surplus lost as a result of the price ceiling.

d. Suggest an alternative policy for helping students acquire textbooks.

Chapter 8

7. Bert Jones owns and operates a laundry whose monthly revenue is \$9,000. Bert could earn \$4,000 a month elsewhere if he did not run the laundry. Monthly expenses are:

| | |
|--------------------------------|---------|
| Labor | \$1,700 |
| Electricity | 100 |
| Rent | 3,300 |
| Interest on loan for equipment | 900 |

a. Calculate Bert's monthly accounting profit.

b. Is the laundry making an economic profit? Should Bert stay in the laundry business? Explain.

8. Workers in a poor cotton-growing region choose between working in a factory at \$6,000 a year or being a tenant cotton farmer. One farmer can work a 120 acre farm that rents for \$10,000 a year. Such a farm yields \$20,000 worth of cotton each year. The total nonlabor cost of producing the cotton is \$4,000 a year. The local government decides to provide free fertilizer that would triple cotton yields.

a. If the price of cotton is unaffected, how would this program affect the income of tenant farmers in the short run? In the long run?

b. Who would benefit from the program in the long run? How much would they gain each year?

9. Louisa, a renowned chef, owns one of the 1,000 spaghetti restaurants in Sicily. Each restaurant serves 100 plates of spaghetti a night at \$5 per plate. Louisa wants to develop the recipe for a sauce that is so tasty that everyone would pay \$10 per plate for her spaghetti.

a. What is the most cost Louisa would be willing to endure if after one day all the other restaurants figure out and copy the recipe for her new sauce?

b. If it took the others one month to copy?

On my honor as an Aggie, I have neither given nor received unauthorized aid on this exam.

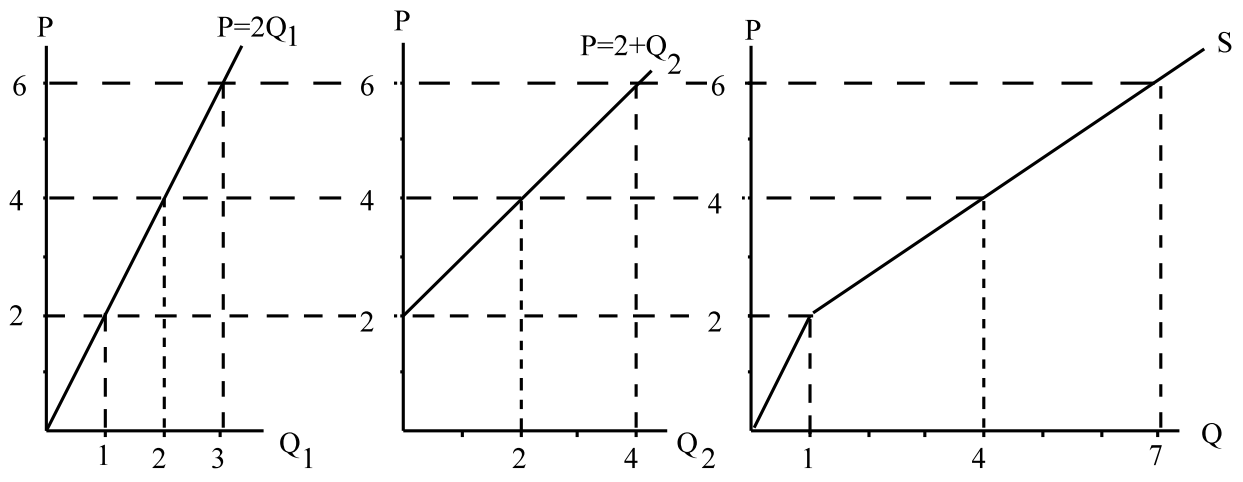
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Practice Exam Two Solutions

Chapter 6

1. The supply curves for the only two firms in a competitive industry are $P = 2Q_1$ and $P = 2 + Q_2$, where Q_1 is the output of firm 1 and Q_2 is the output of firm 2. **Graph** the supply curve for each firm. What is the market supply curve for this industry?

Answer: The market supply curve (right) is the horizontal summation of the supply curves of the individual market participants.



2. A price-taking firm makes air conditioners. Its total costs appear below. The market price for air conditioners is \$120. How many air conditioners should the firm produce per day? What will be its daily profit?

| Air conditioners per day | Total cost (\$ per day) |
|--------------------------|-------------------------|
| 1 | 100 |
| 2 | 150 |
| 3 | 220 |
| 4 | 310 |
| 5 | 405 |
| 6 | 510 |
| 7 | 650 |
| 8 | 800 |

Answer: The marginal cost of each of the first 6 air conditioners produced each day is less than \$120, but the marginal cost of the 7th air conditioner is \$140. So the company should produce 6 air conditioners per day. Total revenue is price of 120 times quantity of 6 equals 720. Total cost is 510. Daily economic profit is total revenue minus total cost $720 - 510 = 210$.

3. What is the profit-maximizing level of output and how much daily profit will the producer below earn if the price of pizza is \$0.50/slice?

Answer: Because price is less than the minimum value of AVC, this producer will shut down in the short run: produce quantity zero. Daily profits are a loss equal to fixed cost. Fixed cost is the difference between total cost and total variable cost. $TC = Q \times ATC = (260 \text{ slices/day}) (\$1.18/\text{slice}) = \$306.80/\text{day}$ and $VC = Q \times AVC = (260 \text{ slices/day}) (\$0.68/\text{slice}) = \$176.80/\text{day}$. So fixed cost = $\$306.80/\text{day} - \$176.80/\text{day} = \$130/\text{day}$. This producer's profit is thus $-\$130/\text{day}$.

Chapter 7

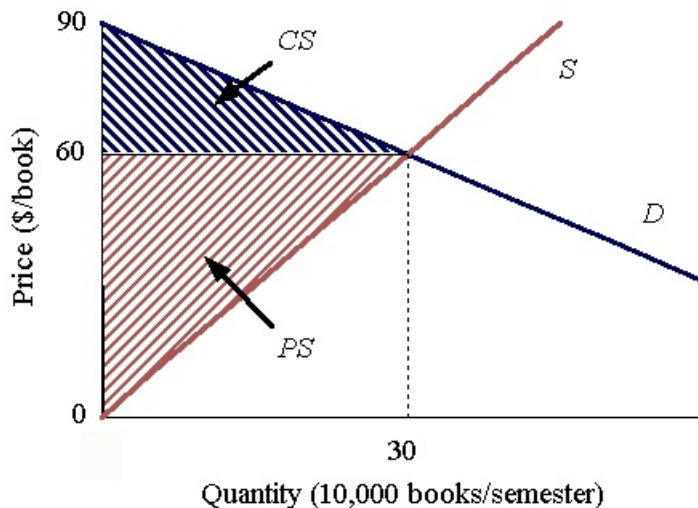
4. Suppose the flight between Houston and College Station can hold 36 passengers but the airline routinely sells up to 40 tickets, assuming some passengers will not show up. Discuss why a policy of offering compensation (such as a travel voucher) to induce some passengers to wait for a later flight is more efficient than turning away the last to arrive when the flight is oversold.

Answer: A compensation policy is more efficient than the first-come-first-served policy because it establishes a market for a scarce resource that would otherwise be allocated by non-market means. Only those people who value taking the flight now the most (more than the value of the travel voucher) will actually take it.

5. Suppose the demand for used textbooks is $P = 90 - Q$ and the supply of used textbooks is $P = 2Q$ at Texas A&M (where Q is measured in 10,000s per semester).

a. **Graph** the market for used textbooks. What is the equilibrium price and quantity?

Answer: The equilibrium quantity is $Q = 30$ as $90 - Q = 2Q$. The equilibrium price is $P = 60$ as $P = 2Q$ (or $P = 90 - Q$).



b. Calculate and **graph** (above) consumer surplus, producer surplus, and total economic surplus. What is the most that consumers and producers together would be willing to pay for the right to be able to buy and sell used textbooks?

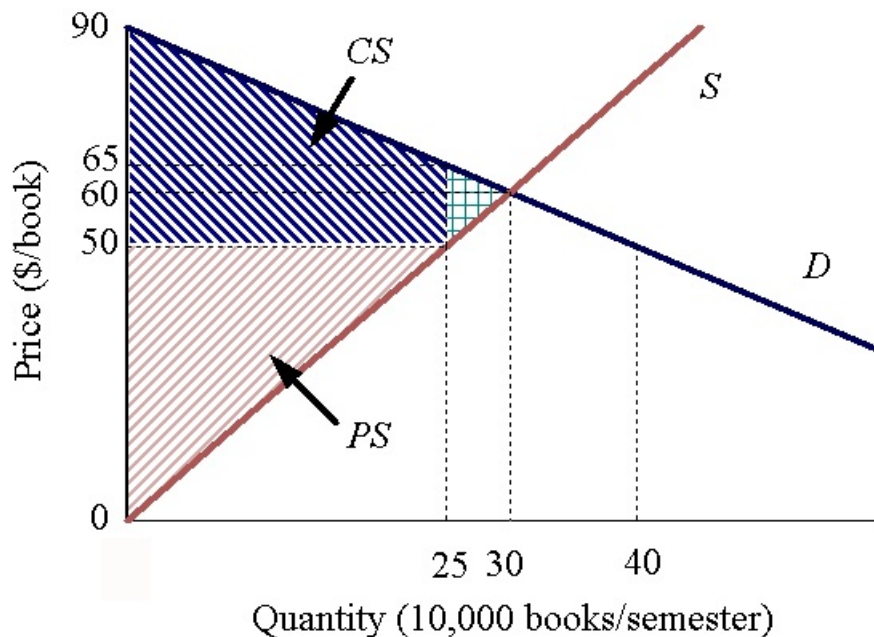
Answer: Consumer surplus is the triangular area between the demand curve and the price line. Consumer surplus is $0.5 (\$30) (30,000) = \$450,000/\text{semester}$. Producer surplus is the triangular area between the supply curve and the price line. Producer surplus is $0.5 (\$60) (30,000) = \$900,000/\text{semester}$. Total economic surplus is the sum of consumer surplus and producer surplus $\$450,000 + 900,000 = \$1,350,000$. Consumers and producers together would be willing to pay 1.35 million dollars for the right to be able to buy and sell used textbooks!

6. Refer to Problem 6. Suppose a price ceiling of \$50 is placed on the market for used textbooks.
a. Calculate the weekly shortage of used textbooks that will result from this policy.

Answer: At a price of \$50, consumers would demand 40,000 used textbooks as $50 = 90 - Q$. Producers would supply 25,000 used textbooks as $50 = 2Q$ (and Q measured in 10,000s). There will be a shortage of $40,000 - 25,000 = 15,000$ used textbooks per semester.

b. Calculate and **graph** consumer surplus, producer surplus, and total economic surplus. Would producer support the price ceiling? Would consumers support the price ceiling?

Answer: Consumer surplus is $0.5 (\$25) (25,000) + (\$15) (25,000) = \$687,500$. Producer surplus is $0.5 (\$50) (25,000) = 625,000$. Total economic surplus is $\$687,500 + \$625,000 = \$1,312,500$. Producers would not support the price ceiling because producer surplus falls. Consumers would support the price ceiling because consumer surplus rises.



c. Calculate and **graph** the total economic surplus lost as a result of the price ceiling.

Answer: The total economic surplus lost due to the price ceiling is $\$1,350,000 - \$1,312,500 = \$37,500/\text{semester}$. It is the area between the demand and supply curves, and between the new quantity exchanged and the equilibrium quantity. $0.5 (\$65 - 50) (30,000 - 25,000) = 0.5 (\$15) (5,000) = \$37,500/\text{semester}$.

d. Suggest an alternative policy for helping students acquire textbooks.

Answer: Coupons, vouchers, subsidies, pure monetary transfers, lowering tuition, etc.

Chapter 8

7. Bert Jones owns and operates a laundry whose monthly revenue is \$9,000. Bert could earn \$4,000 a month elsewhere if he did not run the laundry. Monthly expenses are:

| | |
|--------------------------------|---------|
| Labor | \$1,700 |
| Electricity | 100 |
| Rent | 3,300 |
| Interest on loan for equipment | 900 |

a. Calculate Bert's monthly accounting profit.

Answer: Bert's accounting profit is his revenue minus his explicit costs, $9,000 - 6,000 = \$3,000$.

b. Is the laundry making an economic profit? Should Bert stay in the laundry business? Explain.

Answer: No. Adding the implicit cost of his time to the explicit costs implies that the laundry is making an economic loss of \$1,000, so Bert should shut down if he can avoid all his explicit costs, or as soon as he can.

8. Workers in a poor cotton-growing region choose between working in a factory at \$6,000 a year or being a tenant cotton farmer. One farmer can work a 120 acre farm that rents for \$10,000 a year. Such a farm yields \$20,000 worth of cotton each year. The total nonlabor cost of producing the cotton is \$4,000 a year. The local government decides to provide free fertilizer that would triple cotton yields.

a. If the price of cotton is unaffected, how would this program affect the income of tenant farmers in the short run? In the long run?

Answer: A cotton farmer would make a short-run economic profit of $\$60,000 \text{ revenue} - \$10,000 \text{ rent} - \$4,000 \text{ marketing cost} - \$6,000 \text{ opportunity cost}$, or $\$40,000/\text{yr}$. In the long run, factory workers would want to move into cotton farming, and would thereby bid up the rent on cotton farms. The rent would continue to rise until it reached \$50,000 per farm. At that point the

incentive to leave a factory job would no longer exist, because cotton farmers would again be making zero economic profit.

b. Who would benefit from the program in the long run? How much would they gain each year?

Answer: Landowners would reap the long-term benefits of the scheme. Their income would rise by \$40,000/yr. per 120-acre plot.

9. Louisa, a renowned chef, owns one of the 1,000 spaghetti restaurants in Sicily. Each restaurant serves 100 plates of spaghetti a night at \$5 per plate. Louisa wants to develop the recipe for a sauce that is so tasty that everyone would pay \$10 per plate for her spaghetti.

a. What is the most cost Louisa would be willing to endure if after one day all the other restaurants figure out and copy the recipe for her new sauce?

Answer: The most Louisa would be willing to pay in experimental costs is \$500,000. She could charge all 100,000 patrons \$5 more, but only for one night. After the first night, other producers would figure out the recipe and compete the price back down to \$5 per plate.

b. If it took the others one month to copy?

Answer: Louisa would be willing to pay up to \$15 million dollars (\$500,000/day) (30 days/month). She could charge an additional \$5 per meal each night for a month before the other producers copy her recipe.