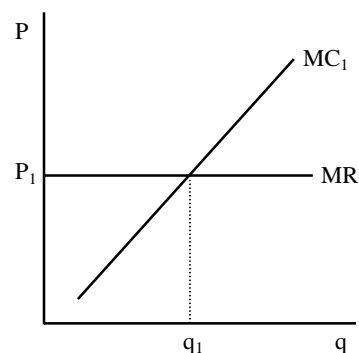


ECONOMICS 2

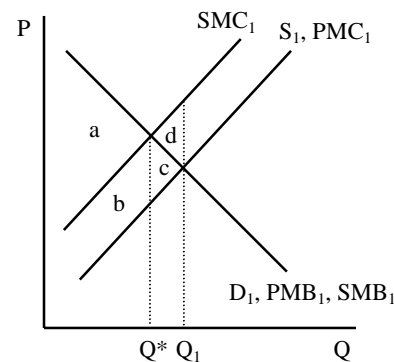
SUGGESTED ANSWERS TO SAMPLE FIRST MIDTERM EXAMINATION

1. False. A profit-maximizing firm wants to produce where marginal revenue is equal to marginal cost ($MR=MC$). For a competitive firm, this occurs where the marginal revenue curve (MR_1), which is horizontal at the prevailing price, intercepts the upward sloping marginal cost curve (MC_1). A profit-maximizing firm wants the gap between total revenue and total costs (profits) to be as large as possible. It accomplishes this by producing any unit for which $MR>MC$. Only when $MR=MC$ has every possible addition to profits been realized. If the firm stops producing at a point where $MR>MC$, profits will not be as large as possible.



2. Almost surely false, or uncertain. There will be gains from specialization whenever opportunity cost differs across producers. In the case described, we do not know anything about opportunity cost. The fact that the two workers are equally productive in bread production only tells us that neither worker has an absolute advantage in bread production. To know about comparative advantage, we need to also know the workers' abilities in cheese production. For example, given that the workers are equally productive in bread production, if one worker is better at cheese production, this would imply that the worker who has an absolute advantage in cheese production also has a comparative advantage in cheese production. And, the worker with an absolute disadvantage in cheese production has a comparative advantage in bread production. There would, therefore, be gains from specialization. Only in the special case where the workers are also equally good at cheese production would the opportunity cost not differ across the two workers, and so there would not be gains from specialization.

3. True. A free, competitive market will produce where supply is equal to demand, or where the private marginal benefit is equal to the private marginal cost. In the diagram, this occurs at the point where S_1 (PMC_1) intersects D_1 (PMB_1), which occurs at Q_1 . Q_1 is the level of production where the total private surplus is as large as possible. However, the presence of an externality implies that the social marginal cost associated with producing the good is higher than the private marginal cost at every level of production. That is, the social marginal cost curve (SMC_1) lies above the private marginal cost curve (PMC_1). From society's perspective, the ideal level of production is Q^* . This is the level of production where the social marginal benefit is equal to the social marginal cost. At Q^* , the total social surplus is as large as possible. Therefore, a free, competitive market will indeed tend to produce more than is socially optimal.



One can see the welfare loss associated with producing Q_1 rather than Q^* explicitly by doing the welfare accounting.

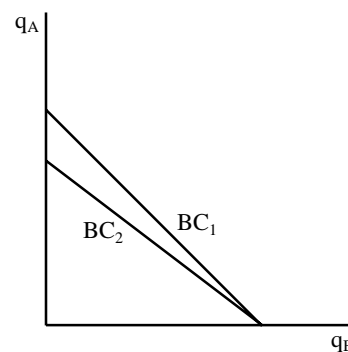
	At Q_1	At Q^*
Total Private Surplus	$a+b+c$	$a+b$
External Costs	$-(b+c+d)$	$-b$
Total Social Surplus	$a-d$	a

The total social surplus at Q_1 is smaller than at Q^* by area d . Therefore, a competitive market does tend to produce more than is socially optimal.

4. False. The income effect of a price increase on the quantity demanded of a good is typically negative. To see this, consider a consumer choosing between two goods, A and B. The budget constraint for the consumer is

$$q_A P_A + q_B P_B = \text{Income},$$

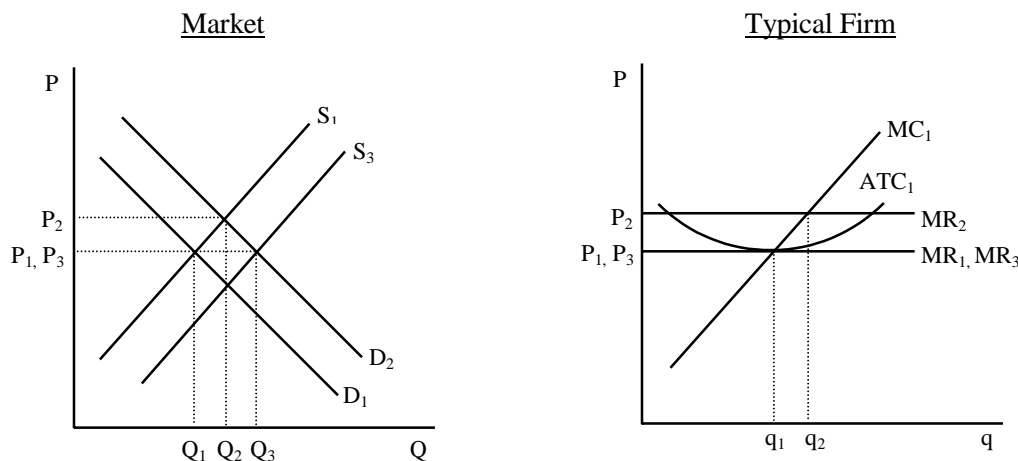
where the q 's are the quantity of each good that the household buys and the P 's are the market prices. The graph of the budget constraint (BC_1) shows the various combinations of good A and good B that the consumer can just afford using all of his or her income. The slope of the budget constraint is the ratio of the two prices. For the way I have drawn the diagram, the slope is $-P_B/P_A$.



If the price of good A rises, this will make the budget rotate down (from BC_1 to BC_2 .) This is true because P_A is now larger, so the slope is a smaller negative number. An increase in the price of one good makes the possible combinations of the two goods that the consumer can afford less good than before. This fact implies that the consumer will want to reduce his or her purchases of both goods so that the budget constraint is satisfied. This effect of a price increase on demand working through the budget constraint is what we refer to as the income effect. And, as the analysis shows, the income effect of a price increase is negative, not positive.

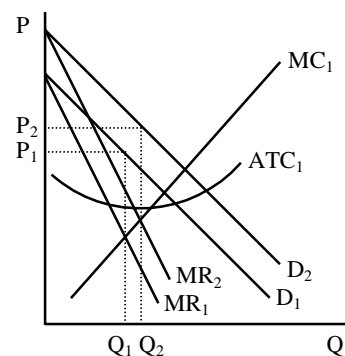
5a. A competitive market will produce where supply is equal to demand. In the diagram, this occurs where the market supply curve (S_1) intersects the market demand curve (D_1). The initial market equilibrium price is P_1 and the initial market equilibrium quantity is Q_1 . The typical firm produces where the marginal revenue curve (MR_1), which is horizontal at the going market price, intersects the marginal cost curve (MC_1). For a competitive market to be in long-run equilibrium, it must be the case that a typical firm is earning zero economic profits. For this to be true, price must equal average total cost at the profit-maximizing level of output. In the diagram, this occurs at quantity q_1 , which corresponds to the point where MC_1 intersects MR_1 and the average total cost curve (ATC_1).

An increase in the quantity demanded at each price implies that the market demand curve has shifted out (from D_1 to D_2). In the short run, the equilibrium quantity will rise from Q_1 to Q_2 , and the equilibrium price will rise from P_1 to P_2 . The marginal revenue curve facing a typical firm will shift up (from MR_1 to MR_2) because of the increase in the market equilibrium price. This will cause a typical firm to choose to produce more in the short run (the quantity will rise from q_1 to q_2). Because price increases by more than average total cost, a typical firm will earn positive economic profits in the short run ($P_2 > ATC$ at q_2).



The positive economic profits will encourage entry in the long run. As firms enter, the market supply curve will shift out (from S_1 to S_3). The equilibrium quantity will increase further (to Q_3) and the equilibrium price will fall. Entry will continue until the price has fallen back to P_1 . Only at this point will a typical firm again be earning zero economic profits.

5b. A monopolist faces a downward sloping demand curve (D_1). As a result, its marginal revenue curve (MR_1) is also downward sloping. The marginal cost curve for a monopolist (MC_1) is upward sloping (as it is for any firm). A monopolist chooses to produce where marginal revenue is equal to marginal cost. This occurs initially at quantity Q_1 . It then charges the price on the demand curve that corresponds to Q_1 (which is P_1). If the average total cost curve (ATC_1) looks as it does in the diagram, the monopolist is earning positive economic profits initially.

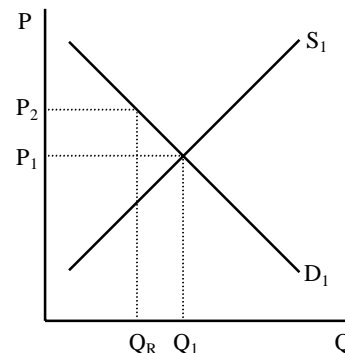


An increase in the quantity demanded at the going price will shift out the demand curve facing the monopolist (from D_1 to D_2). As a result, the marginal revenue curve will also shift out (from MR_1 to MR_2). The monopolist will choose to produce more in the short run in response to the increase in demand. The new profit-maximizing level of production is Q_2 , which is the quantity where MR_2 intersects MC_1 .

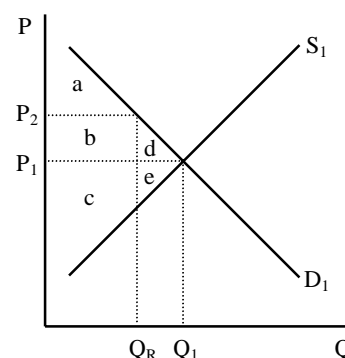
As the picture suggests, the increase in quantity in the short run is smaller for the monopolist than for the competitive market if the marginal cost curve is linear. (This is true because the horizontal shift in the demand curve is larger than the horizontal shift in the marginal revenue curve.) Much more important, the long-run response to the increase in demand is clearly smaller for the monopolist. Because of whatever barrier to entry gave rise to the monopoly in the first place, the increase in demand, which increases profits, does not lead to entry as it does in the competitive market. As a result, the economy does not experience the desirable drawing of resources to this industry following the increase in demand.

6a. Before the rationing program, the initial supply curve in this market is S_1 and the initial demand curve is D_1 . This is a competitive market, so it will produce where supply is equal to demand. The initial equilibrium price is P_1 and the initial equilibrium quantity is Q_1 .

The rationing program allows each firm to produce an equal share of Q_R and prevents new firms from producing the good. As a result, the quantity produced in this market falls from Q_1 to Q_R . Since there is no further government interference in this market, the price will adjust so that the quantity demanded also falls to Q_R . To find the price when there is rationing, we look for the price corresponding to Q_R on the demand curve. This occurs at price P_2 . As one would expect, a program that limits production will raise the price of the good.



6.b. The rationing program will reduce the consumer surplus in this market. Consumer surplus is the area under the demand curve and above the price, up to the quantity produced and consumed. Because price rises (from P_1 to P_2) and quantity falls (from Q_1 to Q_R), consumer surplus is reduced (from area $a+b+d$ to area a). The effect of the rationing program on producer surplus is ambiguous. Producer surplus is the area under the price and above the marginal cost curve, up to the quantity produced and consumed. The rise in price tends to increase the producer surplus, while the reduction in quantity lowers it. In the picture, producer surplus changes from area $c+e$ to area $b+c$.



It is important to realize that area $b+c$ is almost surely an overestimate of the producer surplus in the market after rationing. Though we tend to act as if competitive firms have identical marginal cost curves, this is unlikely to be true. Indeed, all that we truly know about a competitive industry is that at the level each firm chooses to produce, marginal cost is the same and is equal to the going market price and to the firm's average total cost. It is likely that marginal cost rises at different rates for different firms, perhaps because they use different technologies or because they are of different vintages. Because production is allocated by government decree under rationing, there is no assurance that the quantity Q_R will be produced by the firms with the lowest marginal cost. As a result the true producer surplus is likely to be substantially smaller than $b+c$.

There is most definitely a deadweight loss associated with the rationing program. At the very least, because the program reduces the quantity bought and sold, there is a welfare loss equal to the area between the demand curve and the supply curve between Q_R and Q_1 (area $d+e$ in the diagram). And, if there is misallocation between producers, then the deadweight loss would be even larger.

PART III: MULTIPLE CHOICE

[20 POINTS TOTAL]

Circle the **best** answer to each question. Each question is worth 2 points.

7. Consider the PPC for military and nonmilitary goods. If as a society we decide that we want a larger proportion of our output to be military goods, this is likely to correspond to:
 - a. an outward shift of the PPC.
 - b. an inward shift of the PPC.
 - c. a movement along the PPC.**
 - d. a movement from a point inside the PPC to a point on the PPC.

8. Suppose there are two goods, shoes and shirts, and two individuals, Theodore and Angela. If Theodore's opportunity cost of producing shoes is lower than Angela's, this implies that:
 - a. Theodore has an absolute advantage in shoe production.
 - b. Theodore has a comparative advantage in shoe production.**
 - c. a and b.
 - d. it is impossible to tell who has either an absolute advantage or a comparative advantage in shoe production.

9. An outward shift of the supply curve for a good will:
 - a. increase quantity, decrease price, and increase total revenue.
 - b. increase quantity, increase price, and increase total revenue.
 - c. increase quantity, have an ambiguous effect on price, and have an ambiguous effect on total revenue.
 - d. increase quantity, decrease price, and have an ambiguous effect on total revenue.**
 - e. have an ambiguous effect on quantity, increase price, and increase total revenue.

10. The **removal** of a binding price ceiling:
 - a. will increase consumer surplus.
 - b. will decrease consumer surplus.
 - c. will have no effect on consumer surplus.
 - d. can either increase or decrease consumer surplus.**

11. The slope of the budget constraint for two goods depends on:
 - a. the marginal utility of each good.
 - b. the marginal utility of the last dollar spent on each good.
 - c. the prices of the two goods.**
 - d. the level of income.

12. If economists say that the outcome in some market is allocatively efficient, they mean that:
- everyone gets the same amount of the good.
 - consumer surplus is as large as possible.
 - producer surplus is as large as possible.
 - the sum of consumer surplus and producer surplus is as large as possible.**
 - the difference between consumer surplus and producer surplus is as large as possible.
13. The deadweight loss associated with a subsidy will be smaller:
- the less elastic supply is.
 - the more elastic supply is.
 - the less elastic demand is.
 - the more elastic demand is.
 - a and c.**
 - b and d.
 - a and d.
 - b and c.
14. In their article, Glaeser and Luttmer:
- argue that in the absence of rent control, larger families will always be in larger apartments.
 - argue that rent control causes families to move more frequently.
 - present evidence that rent control in New York City has led to a decline in producer surplus in the market for rental housing.
 - all of the above.
 - none of the above.**
15. A monopolist:
- produces the level of output such that marginal revenue is equal to marginal cost.
 - produces a level of output where price is greater than marginal cost.
 - produces a level of output that is below the level that would maximize the sum of producer surplus and consumer surplus.
 - a and b.
 - a and c.
 - b and c.
 - All of the above.**
16. A tax on a good can raise social welfare if:
- the good is produced by a monopolist.
 - demand for the good is quite inelastic.
 - demand for the good is quite elastic.
 - the good has a negative externality.**
 - the good has a positive externality.
 - none of the above.