

2021

AP[®]

CollegeBoard

AP[®] Microeconomics

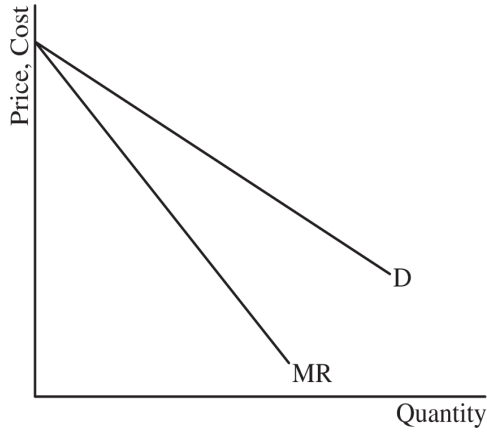
Scoring Guidelines

Set 2

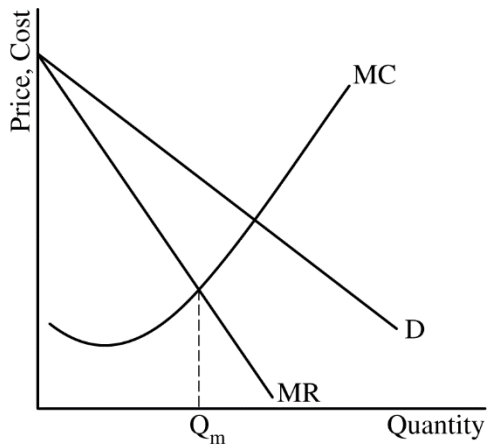
Question 1: Long

10 points

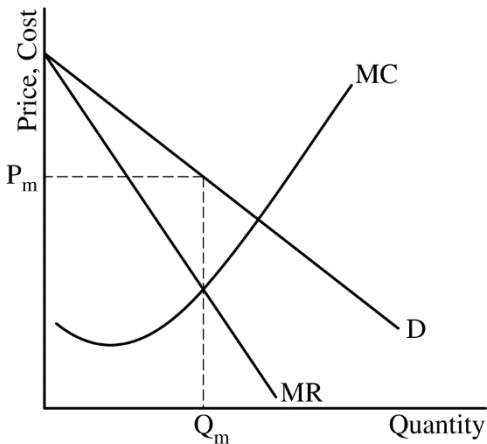
- (a) Draw a correctly labeled graph for NCHart showing downward-sloping demand (D) and marginal revenue (MR) curves with the marginal revenue curve below the demand curve. **1 point**



- For the second point, the graph must show the marginal cost (MC) curve and the profit-maximizing quantity, labeled Q_m , where $MR=MC$. **1 point**

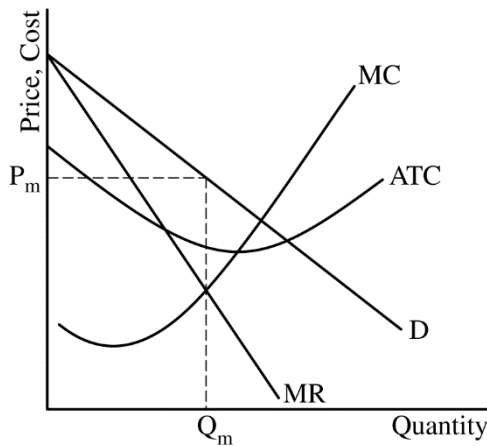


- For the third point, the graph must show the profit-maximizing price, labeled P_m , above Q_m from the demand curve. **1 point**



For the fourth point, the graph must show the ATC below the demand curve at Q_m with the MC curve rising and intersecting the ATC curve at its minimum.

1 point



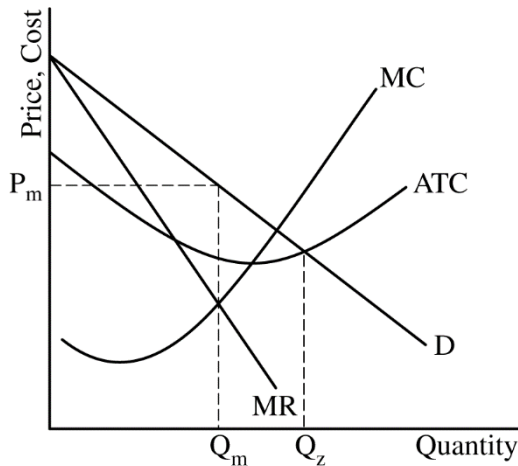
Total for part (a) 4 points

(b) State that demand is elastic and explain that MR is positive at Q_m or that Q_m is less than the quantity at which marginal revenue equals zero.

1 point

(c) (i) On your graph from part (a), show the quantity that is consistent with the goal of NChart generating enough revenue to cover its total costs labeled as Q_z .

1 point



(ii) State there is a deadweight loss at Q_z and explain that P (or D) < MC , as shown.

1 point

Note: Deadweight loss will exist at Q_z if the demand is drawn such that the quantity at which $D=ATC$ is less than the quantity at which $D=MC$, because P (or D) > MC .

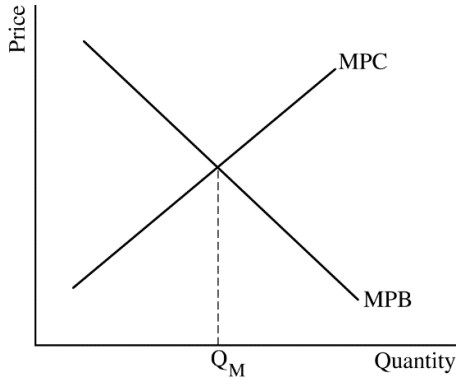
Note: Deadweight loss will NOT exist at Q_z if the demand is drawn such that the quantity at which $D=ATC$ is equal to the quantity at which $D=MC$, because P (or D) = MC .

Total for part (c) 2 points

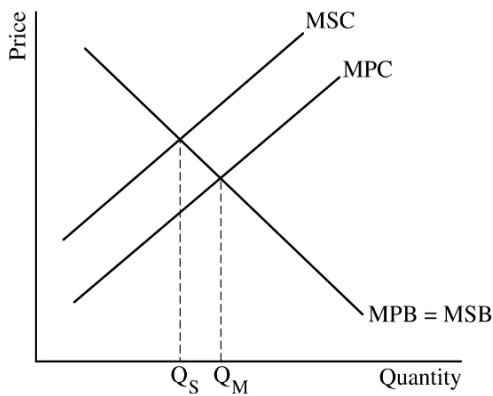
(d) (i)	State that no, TXDrug does not have a dominant strategy, and explain that if NCHart chooses Q_m , then TXDrug's best response is to Enter because $\$1 > \0 , but if NCHart chooses Q_z , then TXDrug's best response is to Stay Out because $\$0 > -\1 .	1 point
(ii)	State that the best response for NCHart is to produce Q_m .	1 point
(iii)	Identify the Nash equilibrium as NCHart produces Q_m and TXDrug chooses to Enter.	1 point
Total for part (d)		3 points
Total for question 1		10 points

Question 2: Short **5 points**

- (a) Draw a correctly labeled graph with an upward-sloping supply curve labeled MPC, a downward-sloping demand curve labeled MPB, and the market equilibrium quantity labeled Q_M . **1 point**

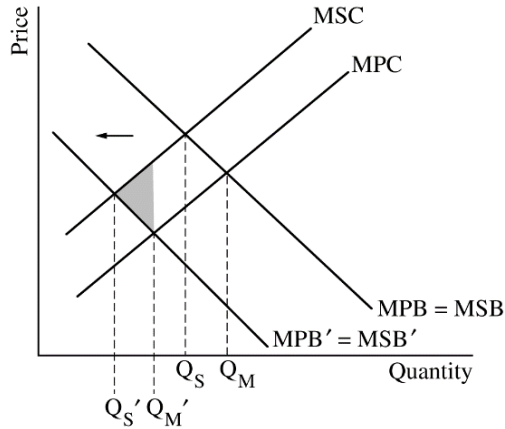


- For the second point, the graph must include the MSC curve above the MPC curve at all output levels and must show the socially efficient quantity labeled Q_S . **1 point**



Total for part (a) 2 points

- (b)** On your graph from part (a), show a leftward shift of the demand curve and shade completely the area of deadweight loss at the new market equilibrium. **1 point**



- (c) (i)** State that the per-unit tax would be equal to the marginal external cost ($MSC - MPC$). **1 point**
- (ii)** Explain that the lump-sum tax will not change the quantity produced because it does not affect the marginal cost. **1 point**

Total for part (c) 2 points

Total for question 2 5 points

Question 3: Short**5 points**

-
- (a) Calculate the total net benefit of placing three advertisements as \$2,200 and show your work: **1 point**

$$\text{Total net benefit} = \$3,000 - \$800 = \$2,200$$

-
- (b) Calculate the marginal net benefit of the third advertisement as \$500 and show your work: **1 point**

$$\text{Marginal net benefit} = (\$3,000 - \$2,200) - (\$800 - \$500) = \$800 - \$300 = \$500$$

-
- (c) Identify the optimal number of advertisements as 4 and explain that the marginal net benefit of the 4th advertisement is positive ($\$600 - \$500 = \$100$), but the marginal net benefit of the 5th advertisement is negative ($\$400 - \$800 = -\$400$). **1 point**

-
- (d) Identify the optimal number of advertisements as 4. **1 point**

-
- (e) State that AZY Foods is operating in a monopolistically competitive market structure. **1 point**

Total for question 3 5 points