Practice Answers

Competitive Market

Practice I

We consider the difference between the demand curve for a competitive industry and the demand curve facing an individual firm in that industry.

a) Explain what would happen if the individual firm tried to charge a higher price for its product.

b) Explain why the individual firm has no incentive to charge a lower price for its product.

c) Explain why the demand curve for an individual firm is horizontal at the current market price.

a) Let the equilibrium market price be p^*. Any firm that tried to charge a higher price would make no sales whatsoever, since consumers would simply make their purchases from other (lower-price) sellers.

b) Each firm can sell as much as it wants at the price p^*. Thus selling at a lower price would not increase sales but would reduce profits. So no firm has the incentive to charge any price below p^*.

c) Each individual firm is very small relative to the market. Thus for any change in output that is realistic for the firm, there would be no significant or noticeable effect on the *industry* level of output and thus no significant effect on the market price. Thus, each firm sees that it can sell any reasonable amount at the given market price.

Practice II

Fill in the blanks to make the following statements correct.

a) The shut-down price is the price at which the firm can just cover its AVC.

b) If the average variable cost of producing any given level of output exceeds the price at which it can be sold, then the firms should shut down and exit the industry .

c) If a firm is producing a level of output such that MC>MR, that firm should reduce output.

d) The profit maximizing level of output for a price-taking firm is the output at which MR and MC are equal and the gap between TR and TC is maximized.

e) If a perfectly competitive firm is producing its profit-maximizing level of output and the price of its output rises, then MR will be greater than MC and the firm should increase output.

Practice III

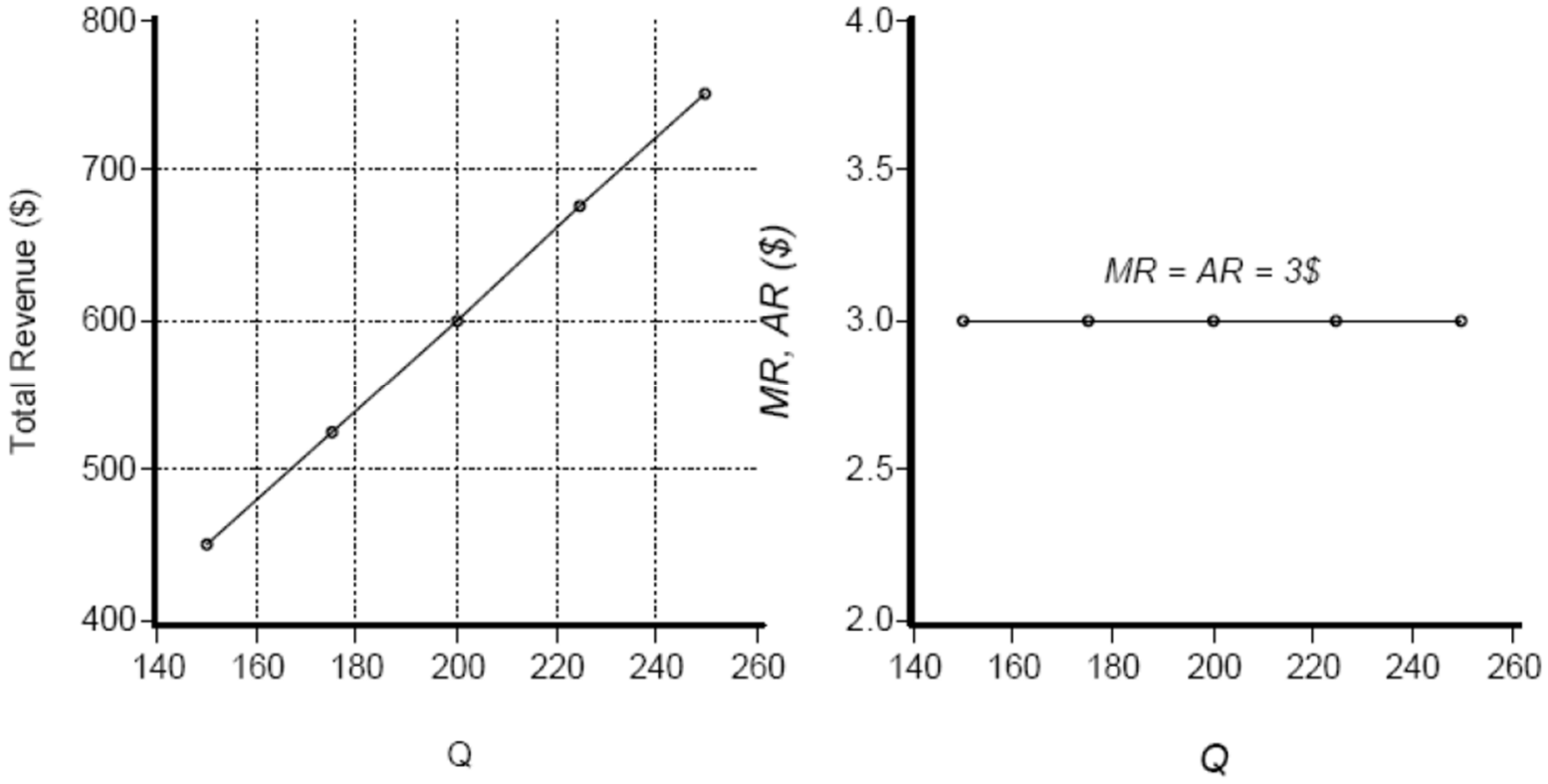
Consider the following table showing the various revenue concepts for DairyTreat Inc., a perfectly competitive firm that sells milk by the gallon. Suppose the firm faces a constant market price of $3 per gallon.

Price (p)	Quantity	Total Revenue (TR)	Average Revenue (AR)	Marginal Revenue (MR)
$3	150	450	3	
3	175	525	3	3
3	200	600	3	3
3	225	675	3	3
3	250	750	3	3

- Explain why for a perfectly competitive firm, AR=MR=p

A perfectly competitive firm is a price taker. It can sell any amount at the given market price, which in this case is $3. Since every unit it sells is sold at the price of $3, it follows that its average revenue is $3 but also its marginal revenue is $3.

Plot the TR, MR and AR curves on a scale diagram. What is the slope of the TR curve?



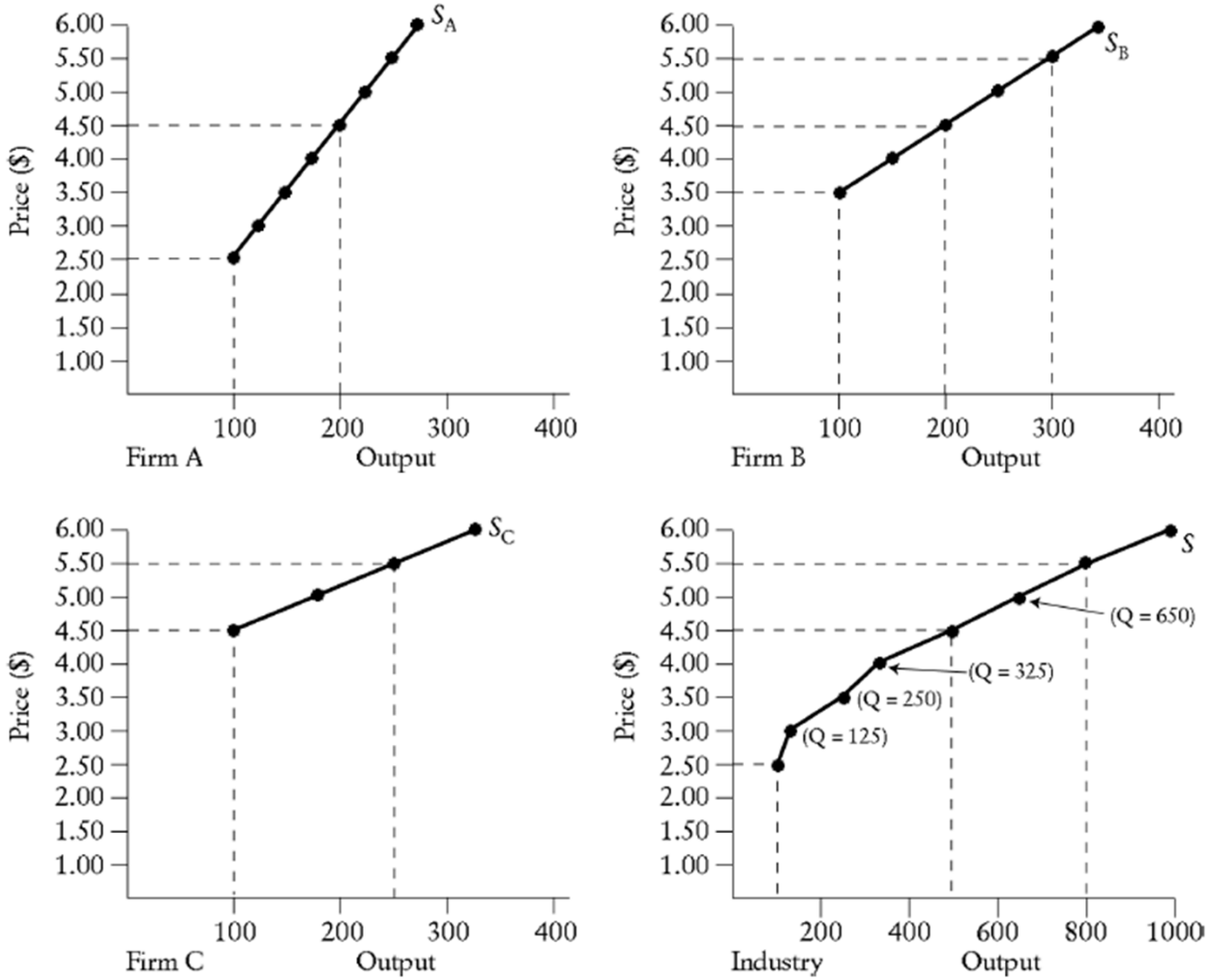
Practice IV

Consider the following table showing the supply schedule for three competitive firms, each producing honey. Assume that these firms make up the entire industry.

a) Compute the total industry supply at each price and fill in the table.

Market price ($/lb)	Output (lb)			
	Firm A	Firm B	Firm C	Industry
2.50	100	0	0	100
3.00	125	0	0	125
3.50	150	100	0	250
4.00	175	150	0	325
4.50	200	200	100	500
5.00	225	250	175	650
5.50	250	300	250	800
6.00	275	350	325	950

Plot the supply curve for each firm and for the industry as a whole.



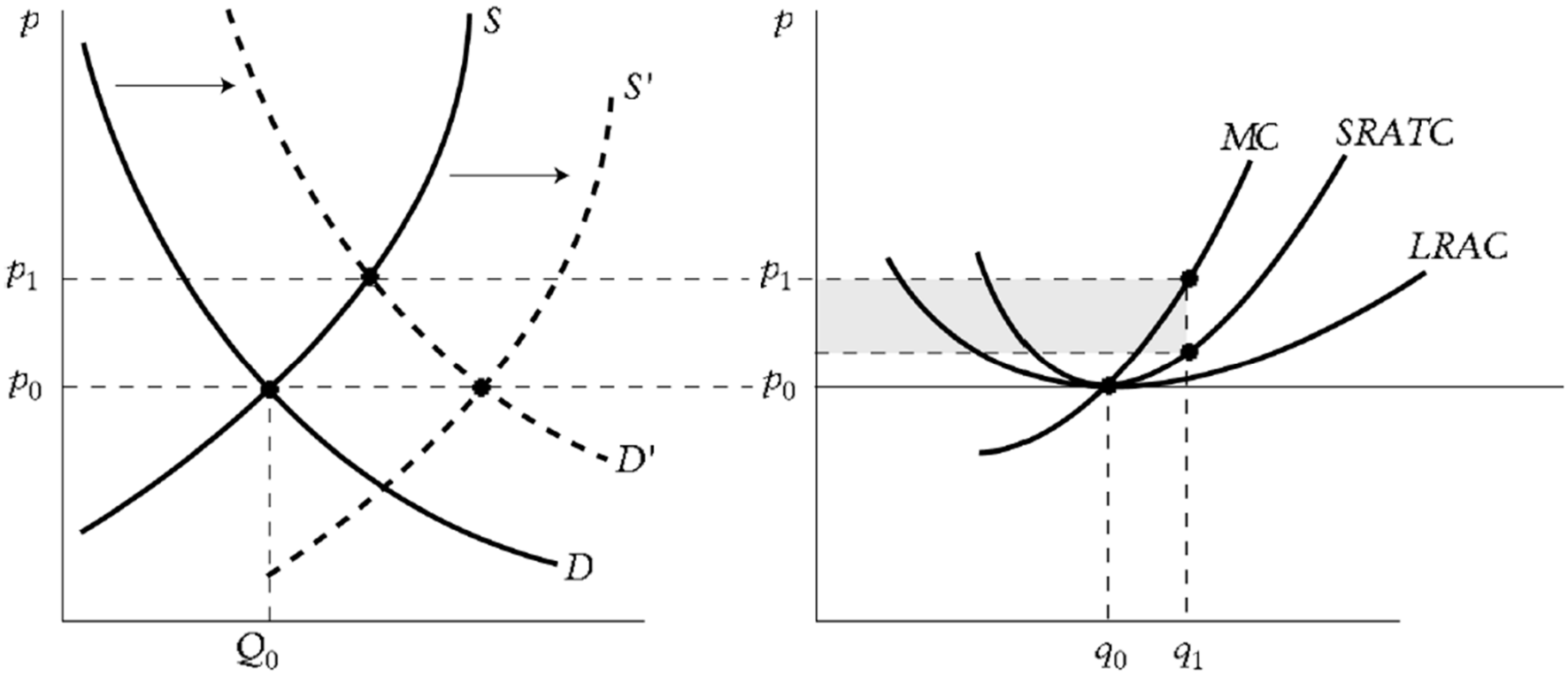
Explain why Firm B produces no output at prices $3 and lower, and why Firm C produces no output at prices $4 and lower.

Firm B produces no output at prices of $3 or below because those prices do not cover Firm B's average variable costs. Similarly for Firm C and prices at or below $4

Practice V

Consider the perfectly competitive barley industry. It is initially in long-run equilibrium at quantity Q_0 and P_0

a) Draw a supply and demand diagram for the barley market, showing the initial long-run equilibrium.
b) Draw a diagram for a typical firm when the industry is in its initial long-run equilibrium, showing its MC, ATC, and LRAC curves. Are any profits being earned by the typical barley farmer?


p
S
S'
p_1
p_0
D'
D
Q_0
Industry output
p
MC
SRATC
LRAC
p_1
p_0
q_0
q_1
Firm output

Now suppose that there is an increase in demand (caused by an increase in demand for beer, which uses barley as an input). Price rises to P_1. In your diagram, show the typical firm's response to the increase in market price from P_0 and P_1. Show the typical firm's profits at this new price.

The increase in demand for barley shifts the demand curve to D' and raises the short-run equilibrium price to p_1. The increase in market price causes each firm to increase its own output along its MC curve, to output q_1 for the typical firm shown. The profits at this new high price are shown by the shaded area.

Explain how this industry adjusts to its new long-run equilibrium. Illustrate this adjustment both in the demand-and-supply diagram and in the diagram of the typical firm.

The positive profit in part (c) leads other firms to enter this industry. As new barley farmers enter the industry, the industry supply curve shifts to the right and reduces the equilibrium market price. Entry continues until existing firms are not making any economic profits. As long as technology has not changed, firm's cost curves do not shift and so supply shifts eventually to S', where the market price has returned to p_0. At this point, the typical firms are again making zero economic profits.