COST OF PRODUCTION & THEORY OF THE FIRM

1. A firm that decides to shut-down but is still in business would find which of the following to be true of its fixed and variable costs?

   (C) positive and $0

   Fixed costs are the same regardless of the level of output, therefore at zero output, fixed costs would be positive. At zero output, variable costs are zero.

2. Based on the information in the table above, the total cost of producing 5 units of output is:

   (C) 305

   Total cost is fixed cost (of 200) plus variable cost (of 105).

3. Based on the information in the table, the marginal cost of producing the 4th unit of output is:

   (A) 10

   Marginal cost is the difference in total cost (or variable cost) at two consecutive units of output. At 3 units of output, total cost is 285, at 4 units of output, total cost is 295. Therefore, the cost attributed to the production of the 4th unit, or marginal cost, is 10.

4. Based on the information in the table, the price of the product this firm is selling is:

   (C) $100

   Total revenue for three units of output is $100. Total revenue divided by quantity is average revenue or price. $300 / 3 = $100.

5. Based on the information in the table, the average fixed cost of producing 5 units of output is:

   (D) 40

   Average fixed cost is total fixed cost divided by quantity. Total fixed cost is 200, divided by a quantity of 5, equals 40 for average fixed cost.

6. Based on the information in the table, the profit-maximizing level of output for this firm is:

   (B) 7

   The profit maximizing level of output is where marginal revenue equals marginal cost. At 7 units of output, marginal revenue is 100 and marginal cost is 80. At 8 units of output, marginal revenue is 100 and marginal cost is 200. A profit-maximizing firm will produce 7 units, but not the 8th unit.

7. Which set of cost curves in the figures below is correctly drawn?

   (E) E

   Marginal cost must intersect average total cost and average variable cost at their minimum points. Average fixed cost declines throughout the range of output. Average total cost is comprised of average fixed cost and average variable cost added together.

8. The firm depicted in the graph below is

   (B) a perfectly price discriminating monopoly.

   Only for a perfectly price discriminating monopoly are the downward sloping marginal revenue and the demand curves the same because the perfectly price discriminating monopolist charges each successive customer the price they are willing to pay, unlike a single price monopolist who lowers the price for not just that unit, but all previous units.

9. Based on the information in the payoff matrix box depicted above, we can conclude that in the absence of collusion

   (B) Charles and Anne will each charge a high price.

   The Nash equilibrium is for both Charles and Anne to charge a high price.

10. Based on the information in the payoff matrix box depicted above, we can conclude that

    (D) Charles does not have a dominant strategy but Anne does.

    The best strategy for Charles is to price high if Anne prices high and to price low if Anne prices low. Charles does not have a dominant strategy, his best strategy is determined by what Anne does. Anne will price high regardless of what Charles does. Anne has a dominant strategy, she is better off to price high regardless of which pricing strategy Charles uses.

11. If Charles and Anne can successfully collude and agree to a binding enforceable agreement, what would be Anne's profit?

    (D) 25

    A low pricing strategy for both would result in the highest total profit for both parties.

12. The three basic forms of business organization are

    (C) proprietorship, partnership, corporation.

    Monopoly is a market structure, not a form of business organization.

13. Firms in all market structures seek to

    (D) maximize profit.

    Profit mazimization is the goal of all firms regardless of market structure.

14. If fixed costs for a firm operating under conditions of perfect competition increased, but not enough to lead the firm to shut down, how would that change in fixed cost affect output, profit, and price of the firm?

(B) no change, decrease, no change

If marginal cost and marginal revenue do not change, then the intersection of marginal cost and marginal revenue will not change. Without a change in marginal cost or marginal revenue, the output and price would not change. An increase in fixed cost will increase total cost and, therefore, lower profit. Perfectly competitive firms are price takers and cannot determine the price, so the price will not change.

15. Based on the graph below, this is a firm facing which combination of events?

(A) Positive, firms entering the market in the long-run

The price is above average total cost which means the firm is making a profit. When firms in an industry are experiencing economic profits, new firms will enter the market attracted by those profits.

16. Marginal cost is calculated by

(B) subtracting total cost at two consecutive units of output.

Marginal cost is defined as the additional cost of producing one more unit. It can be calculated by subtracting the total cost (or variable cost) at two consecutive units of output.

17. Which of the following correctly ranks market structures from least to most competitive?

(A) monopoly, oligopoly, monopolistic competition, perfect competition

Only choice A correctly ranks market structures from least to most competitive.

18. Which of the following is/are necessary for a firm to be able to engage in price discrimination?

(E) I, II, and III

In order for a firm to be able to price discriminate, the firm must have monopoly power, they must be able to prevent resale, and they must be able to segregate or subdivide the market.

19. Based on the graph in the figure below, the monopoly price, break-even price, and socially optimum price are (respectively):

(E) B, C, E

The monopoly price is determined from MC = MR up to the demand curve, that is B. The break even price is where AR = ATC, which occurs at C. The socially optimal price is where MC = price (or AR) which occurs at E.

20. Which of the following is true for both a perfect competitor and a monopolistic competitor in long-run equilibrium?

(A) Earns normal profits, Earns normal profits

Both perfectly competitive firms and monopolistically competitive firms break-even in the long-run. Only the perfectly competitive firm is efficient at that long-run position. The monopolistically competitive firm does not operate at minimum ATC, allocative, or productive efficient levels of output.

21. Based on the table below, which of the following is true?

(A) Karen has a dominant strategy but Lauren does not.

It is best for Karen to pursue Plan A regardless of what Lauren does; therefore, Karen has a dominant strategy. Lauren would be better off with Plan A if Karen pursues Plan A, but Lauren would be better off with Plan B if Karen pursues Plan B. Therefore, Karen has a dominant strategy; she should pursue Plan A regardless of which plan Lauren pursues. Lauren does not have a dominant strategy. She would benefit from different plans depending on what Karen does.

22. What area in the figure above describes total revenue at the profit maximizing level of output?

(B) F, Z, 2, 0

Total revenue is calculated by multiplying average revenue times quantity. At the profit maximizing level of output (which is found at MC = MR) of 2, the price is derived by tracing that output up to the average revenue curve at point Z, then across to the price axis at point F. The total revenue is price multiplied by quantity, or F × 2, which is described by the area F, Z, 2, 0.

23. What area in the figure above describes total cost at the profit maximizing level of output?

(D) B, T, 2, 0

Total cost is calculated by multiplying average total cost by quantity. At the profit maximizing level of output of 2, average total cost is obtained at point T by tracing that over to the cost axis at point B. B multiplied by 2 is described by the area B, T, 2, 0.

24. What area in the figure above represents profit or loss at the profit maximizing level of output?

(E) A profit of F, Z, T, B

Profit (or loss) is determined by comparing total revenue and total cost. In this case total revenue is larger, so this results in a profit. Question 22 demonstrated how to arrive at total revenue, Question 23 described how to arrive at total cost. If total cost is subtracted from total revenue, the result is the area described by F, Z, T, B.

25. If the government imposes a lump-sum tax on the monopolist in the figure, what will be the effect on the profit maximizing level of output?

(C) It will remain at 2.

Imposing a lump-sum tax will change fixed cost, not marginal cost. Since marginal cost and marginal revenue do not change with a lump-sum tax, the profit maximizing level of output will not change.

26. In the figure above, at what level of output are average costs minimized?

(D) J

Average costs are minimized at the minimum point on the ATC curve. This can be found where the ATC curve intersects with the MC curve. In this case that occurs at a level of output of J.

27. Based on the information in the figure above, total fixed cost is equal to

(E) E, N, S, C

Total fixed cost is calculated by multiplying average fixed cost times quantity of output. Average fixed cost is the difference between average total cost and average variable cost. In this case that amount is equal to the distance between N and S. Since we know the quantity is equal to the distance from 0 to K, the product of those two amounts is represented by the area E, N, S, C.

28. Based on the information in the figure above, consumer surplus is represented by the area:

(B) D, E, C

Consumer surplus is the area above the price and below the demand curve. In this case, the area D, E, C.

29. Based on the information in the figure above, the amount of profit is represented by the area:

(D) C, E, L, A

Profit is total revenue minus total cost. Total revenue is price multiplied by quantity. In this case, C × K, or the area C, E, K, 0. Total cost is AC multiplied by quantity. In this case A × K, or the area A, L, K, 0. The difference between these two areas is C, E, L, A.

30. Based on the information in the figure above, the amount of deadweight loss due to monopoly is represented by the area:

(D) E, G, L

Deadweight loss due to monopoly is the amount that does not accrue either to consumers (in the form of consumer surplus) or the producer in the form of profit as compared to the perfectly competitive solution. The perfectly competitive solution would be where MC = P (or demand); in this case, point G. This would result in a consumer surplus of D, G, A. The monopoly solution is point L where MC = MR. The new consumer surplus is D, E, C, and the profit to the monopolist is C, E, L, A. The sum of consumer surplus and monopoly profit is smaller than the competitive consumer surplus by an amount equal to E, G, L.

31. If the monopolist shown in the figure is able to perfectly price discriminate, the maximum profit output is:

(D) I

A perfectly price discriminating monopolist would have a marginal revenue curve equal to the average revenue curve. The profit maximizing level of output would be where marginal revenue equals marginal cost, or point G. The level of output associated with point G is I.

32. If the monopolist shown in the figure is able to perfectly price discriminate, consumer surplus is:

(E) Zero

A perfect price discriminating monopolist would charge each customer exactly what they are willing to pay, thus eliminating all consumer surplus.

33. Based on the information in the figure above, which of the following is correct?

(A) Graph A is for the market and graph B is for the firm.

Supply and demand determine the price in the market, graph A. Individual firms take the price from the market and determine their profit maximizing level of output based on costs, graph B.

34. Based on the information in the figure, which of the following is correct?

(C) Firms will exit the market and drive the price up.

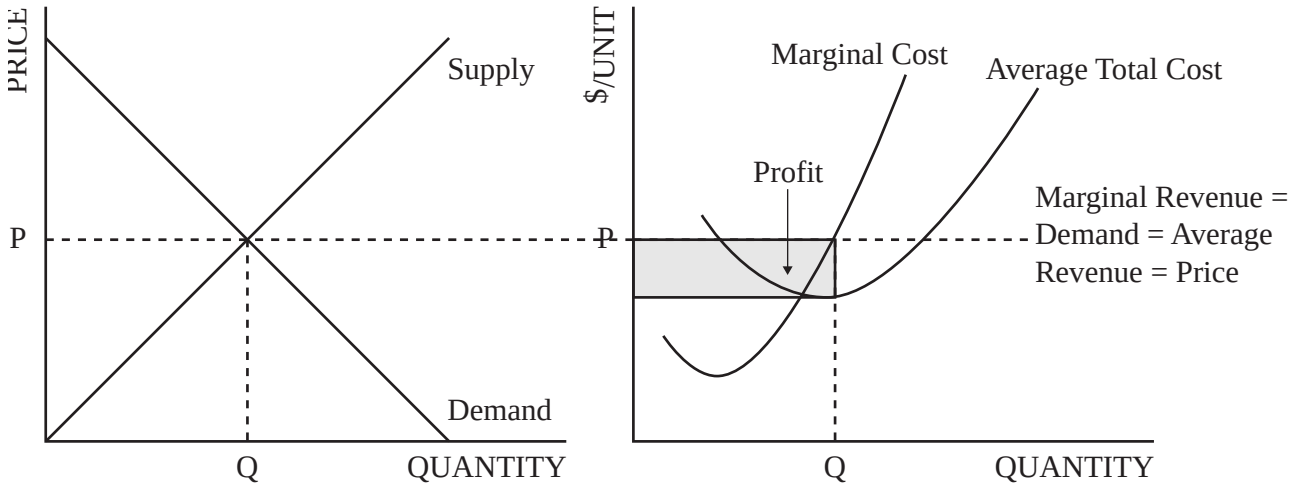
Graph B shows firms making economic loses. This will result in some existing firms exiting the market, driven off by those economic losses. As existing firms exit the market, the supply will decrease, driving the price up.

35. Which of the following is true if a monopolist is operating in the elastic portion of the demand curve?

(A) Marginal revenue is positive.

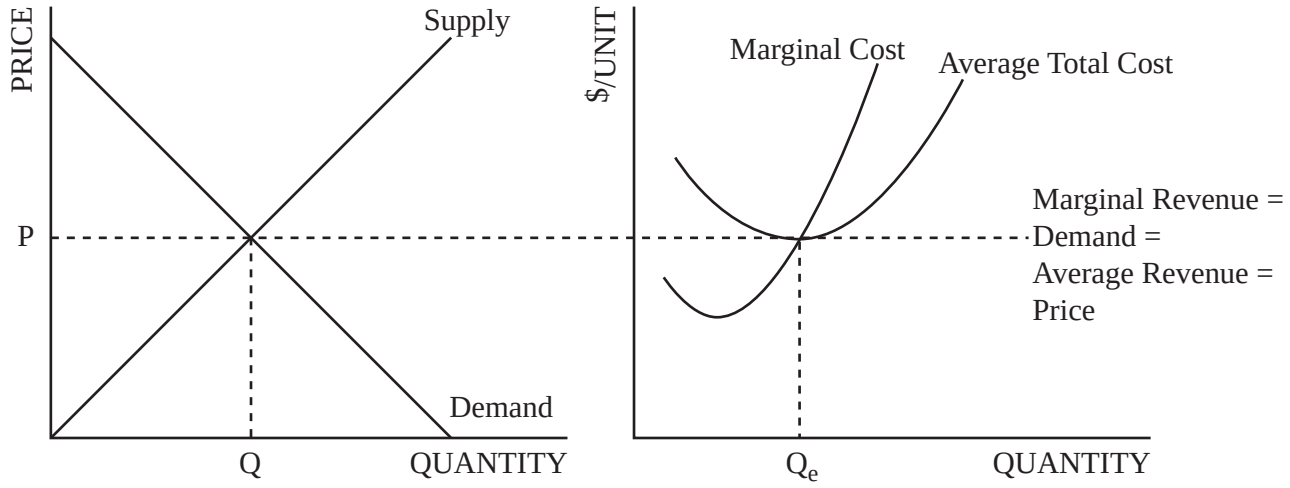
If demand is elastic, lowering the price will increase total revenue. An increase in total revenue means that marginal revenue is positive.

1. Create side-by-side graphs for a perfectly competitive firm earning short-run economic profits.



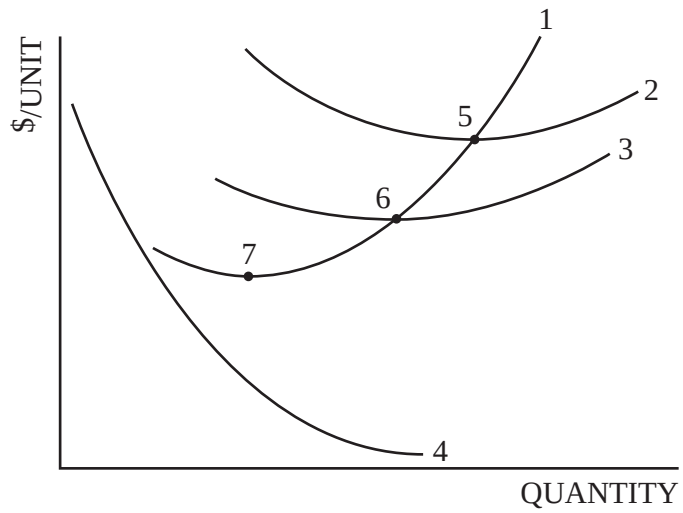
(a) Is the short-run economic profit sustainable in the long-run? Explain.
No. New firms will enter the market and drive the price down so that firms are earning normal profits. Economic profit will become zero.

(b) Redraw the graph drew to demonstrate the long-run equilibrium position for the firm and the market.



(c) Identify the allocatively efficient level of output on the graph you drew for part (b).
Output level Q_e is the allocatively efficient level of output. The allocatively efficient level of output is the output at which marginal cost equals demand.

2.



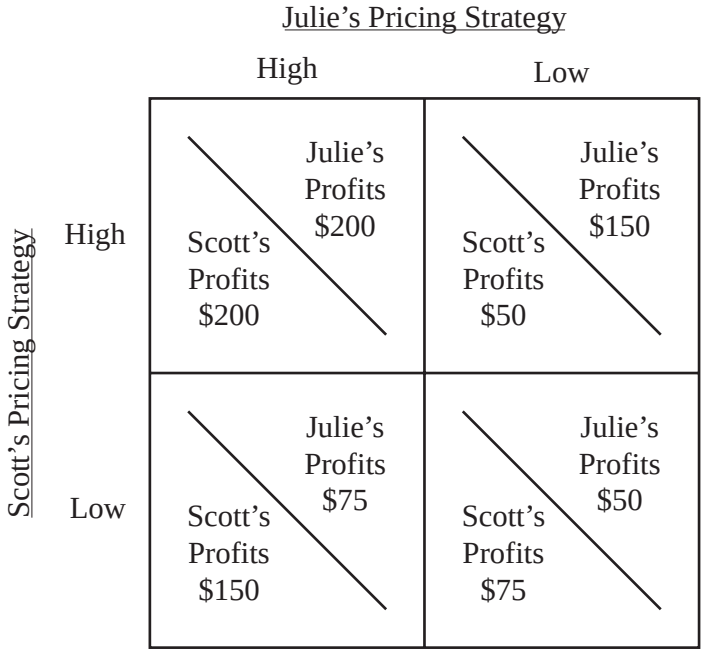
(a) On the graph above, correctly identify curves 1, 2, 3, and 4.
Curve 1 is the marginal cost curve, curve 2 is average total cost, curve 3 is average variable cost, and curve 4 is average fixed cost.

(b) Identify the market structure in which this firm is operating.
It is not possible to determine the market structure from only cost information. Revenue information would be necessary to help identify the market structure.

(c) If this firm is operating in a perfectly competitive market, identify a price that could exist only in short-run equilibrium.
Any price above the price associated with point 6 could exist in the short-run as this would maximize profits (minimize losses). If price falls below minimum average variable cost, the firm will minimize losses in the short-run by shutting down.

(d) If this firm is operating in a perfectly competitive market, identify a price that could exist only in long-run equilibrium.
The only price that could exist in the long-run is the price associated with point 5 as this is the break-even or normal-profit price.

3.



Julie and Scott each own a firm operating in a local market. They face no other competition, they sell a slightly differentiated product, and they face significant barriers to entry. Based on this information, and the information in the figure above, answer each of the following:

(a) In what market structure do Julie and Scott operate? Explain.
Oligopoly. There are only two firms competing and their pricing decisions are interdependent.

(b) Does Julie have a dominant strategy? Explain.
Julie has a dominant strategy as her best strategy is a high price regardless of what Scott does.

(c) Does Scott have a dominant strategy? Explain.
Scott does not have a dominant strategy as his best strategy depends on what Julie does. If Julie prices high, it is better for Scott to price high. If Julie prices low, it is better for Scott to price low. Scott's best strategy depends on what Julie does.

(d) In the absence of collusion, what pricing strategy will prevail in this market?
Julie and Scott will both pursue a high price strategy. This is the Nash equilibrium. Each will maximize profits by choosing a high price strategy.