

Puzzles on Applications of Differentiation and Integration in Economics and Commerce

1. The marginal cost of producing x units is $MC = 6x + 4$. If the fixed cost is Rs. 120, find the cost function and average cost function.
2. A firm's marginal cost is $MC = 9x^2 - 4x + 10$. If the total cost of producing 2 units is Rs. 150, determine the total cost function.
3. The marginal revenue of a product is $MR = 50 - 4x$. If revenue is zero when $x = 0$, find the revenue function and demand function.
4. A company's marginal revenue is $MR = 100 - 2x$. Find the revenue function and the corresponding demand function.
5. If demand function is $p = 60 - 3x$, find the consumer surplus when market price is Rs. 30.
6. The supply function of a commodity is $p = 5 + 2x$. If market price is Rs. 25, calculate the producer's surplus.
7. The marginal cost is $MC = 12x - 6$ and fixed cost is Rs. 50. Find total cost and average cost when $x = 5$.
8. Given $MR = 80 - 8x$, find the revenue function and determine the level of output that maximizes revenue.
9. Demand function is $p = 100 - 5x$ and supply function is $p = 20 + 3x$. Find equilibrium price and quantity, then compute consumer surplus.
10. If marginal revenue equals marginal cost where $MR = 120 - 6x$ and $MC = 20 + 4x$, find profit maximizing output and maximum profit.
11. The marginal cost is $MC = 15 + 3x^2$ and fixed cost is Rs. 200. Determine total cost and average cost when $x = 4$.
12. If $MR = 200 - 10x$, find total revenue and demand function. Also determine the quantity for maximum revenue.
13. A demand function is $p = 75 - x^2$. Find consumer surplus when market price is Rs. 50.
14. Supply function is $p = 4x + 10$. Calculate producer surplus when price is Rs. 50.
15. Marginal cost is $MC = 5x^2 + 6x + 8$. If fixed cost is Rs. 100, determine total cost function.
16. A firm has $MR = 150 - 5x$ and $MC = 30 + 5x$. Find equilibrium output and maximum profit.
17. Demand function $p = 120 - 2x$. Find total revenue function and determine output for maximum revenue.
18. If $MC = 20 + 2x$ and fixed cost is Rs. 80, find cost function and average cost when $x = 10$.

19. For demand function $p = 90 - 3x$, calculate consumer surplus at market price Rs. 45.

20. Given supply function $p = x + 10$, find producer surplus when price is Rs. 40.