

9. Given that the total cost function for x units of a commodity is: $C(x) = \frac{x^3}{3} + 3x^2 - 7x + 16$.
- Find the marginal cost (MC).
 - Find the average cost (AC).
 - Prove that: *Marginal Average cost (MAC)* $= \frac{x(MC) - C(x)}{x^2}$. [ISC 2011]
10. If total cost function is given by $C = a + bx + cx^2$, where x is the quantity of output show that:
 $\frac{d}{dx}(AC) = \frac{1}{x}(MC - AC)$, where (MC) is the marginal cost and (AC) is the average cost. [ISC 2012]
11. A company produces a commodity with ₹ 24,000 fixed cost. The variable cost is estimated to be 25% of the total revenue recovered on selling the product at a rate of ₹ 8 per unit. Find the following:
- cost function,
 - revenue function,
 - break-even Point. [ISC 2013]
12. A firm has the cost function $C = \frac{x^3}{3} - 7x^2 + 111x + 50$ and demand function $x = 100 - p$.
- Write down the total revenue function in terms of x .
 - Formulate the total profit function P in terms of x .
 - Find the profit maximizing level of output x . [ISC 2014]
13. The average cost function, AC for a commodity is given by $AC = x + 5 + \frac{36}{x}$, in terms of output x . Find :
- the total cost C and marginal cost MC as a function of x .
 - the outputs for which AC increases. [ISC 2015]
14. The demand function is $x = \frac{24-2p}{3}$, where x is the number of units demanded and p is the price per unit.
 Find:
- the revenue function R in terms of p ,
 - the price and the number of units demanded for which the revenue is maximum. [ISC 2016]
15. The demand for a certain product is represented by the equation $p = 500 + 25x - \frac{x^2}{3}$ in rupees where x is the number of units and p is the price per unit. Find:
- marginal revenue function,
 - the marginal revenue when 10 units are sold. [ISC 2017]
16. Given the total cost function for x units of a commodity as:
- $$C(x) = \frac{1}{3}x^3 + 3x^2 - 16x + 2.$$
- Find:
- marginal cost function.
 - average cost function. [ISC 2018]