



$$Q_s = 15P - 90$$

What are the new equilibrium values?

5. The market demand of a merchandise is given by  $P = 150 - 45x$ .

The merchandise is supplied by two duopolists with total cost functions

$$C_1 = X_1^2 + 13x_1 + 45 \text{ and } C_2 = 13x_2^2 + 11x_2 + 100$$

Assume that the conjectural variations are zero.

- (i) Show that the reaction curve of each duopolistic is a straight line.
  - (ii) Indicate the equilibrium output of each duopolistic and under duopoly
  - (iii) If the total cost of each duopolistic is same i.e.  $C = x^2 + 2x = 50$ , find equilibrium output under duopoly and monopoly.
  - (iv) If the total cost of each duopolistic is constant, find equilibrium output under duopoly.
2. A) Let the demand function for soft drinks be given by  $Q = 205 Y^{1.3} P^{-1.6} R^{0.7}$ , where Q is the quantity of soft drinks demanded, P is the retail price of the soft drinks, and R is the mean retail price of all other commodities. Calculate:
- (i) The price elasticity of demand; and
  - (ii) The income elasticity of demand.
- b) A firm produces an output of x tons of a certain product at a total variable cost given by

$$\pi = ax^3 - bx^2 + cx$$

Show that the average cost curve is a parabola; find the output for least average cost and the corresponding value of average cost.

3. Using equations discuss the following topics:
- (i) Cobweb model.
  - (ii) Monopoly price and output.