

3) In some situation it is convenient to define anew unrestricted variable X_0 which is equal to the value of the object function , then the problem can be written as :

(Maximize or Minimize) $Z = X_0$

Subject to

$$X_0 = \sum_{j=1}^n C_j X_j = 0$$

$$\sum_{j=1}^n a_{ij} X_j (\leq, =, \geq) b_i$$

$$i = 1, 2, \dots, m$$

And

$$X_j \geq 0, j = 1, 2, \dots, n$$

Canonical and Standard form of L.L.P

1) Canonical form :

The general linear.p.p can always be put in the following form , called the canonical form :

$$\text{Max } z = \sum_{j=1}^n C_j X_j$$

Subject to

$$\sum_{j=1}^n C_j X_j \leq b_i, \quad i = 1, 2, \dots, m$$

$$X_j \geq 0 \quad , \quad j = 1, 2, \dots, n$$

The characteristics of this form are:

- 1) Objective function is maximization type .
- 2) All constraints are of the (\leq) type , except non-negative restriction which are (\geq) type .
- 3) All the decision variables are non-negative .