Lecture-5
SLa

Date 09/02/18

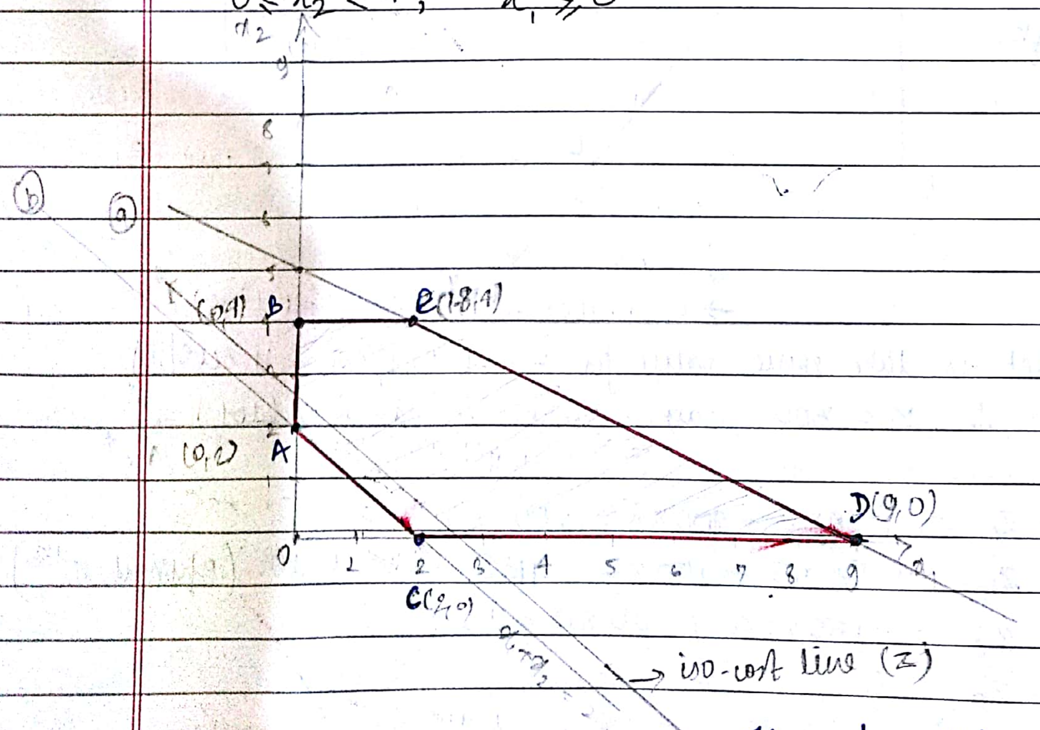
Remarks

1) The LPP has unique solution if there is exactly one point as the optimal solution.
2) The LPP has infinite solutions iff the isoprofit or isocost line coincides with one of the constraint lines.
3) The LPP has unbounded solution if the feasible region is unbounded in case of a maximizing problem.
4) The LPP has no solution if there is no feasible region.

* For maximizing profit : iso-profit line
* For minimizing cost : iso-cost line

Q. Solve the LPP graphically -

$$\min z = x_1 + x_2$$
$$5x_1 + 9x_2 \leq 45 \quad - (a)$$
$$x_1 + x_2 \geq 2 \quad - (b)$$
$$0 \leq x_2 \leq 4, \quad x_1 \geq 0$$



If we parallely shift this line towards origin, it will coincide with line (b). So, infinite sol^n possible.

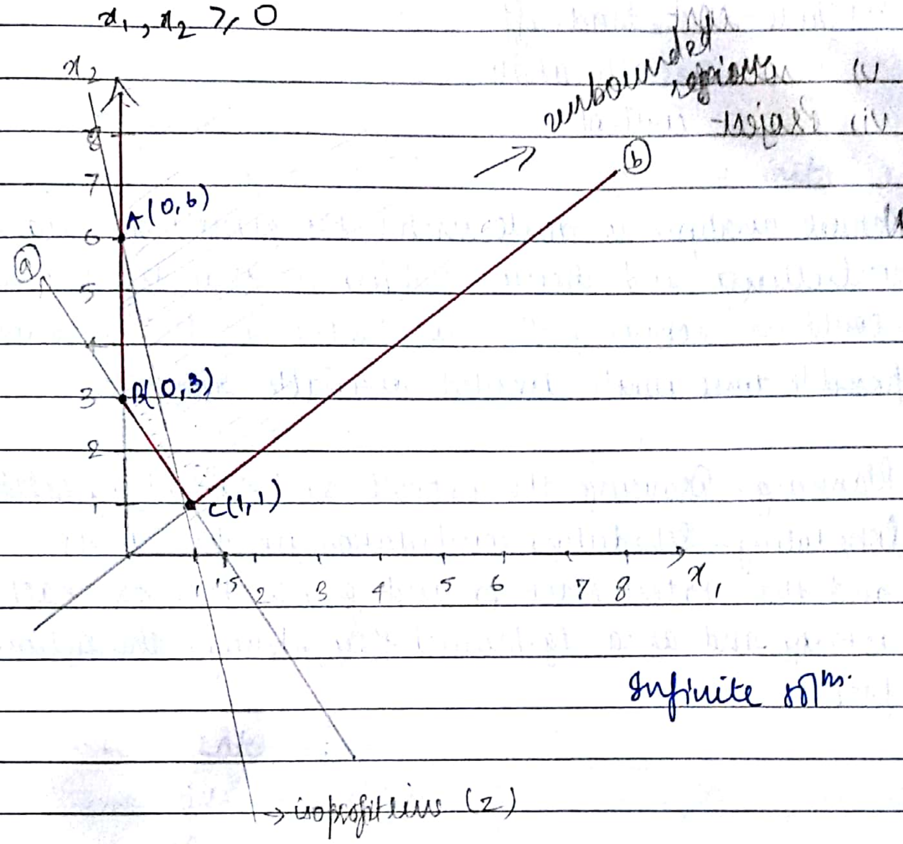
Q. Solve the LPP graphically -

$\max z = 6x_1 + x_2$

s.t. $2x_1 + x_2 \geq 3$ — (a)

$x_2 - x_1 \geq 0$ — (b)

$x_1, x_2 \geq 0$



Infinite soln.

Q. Solve the LPP graphically

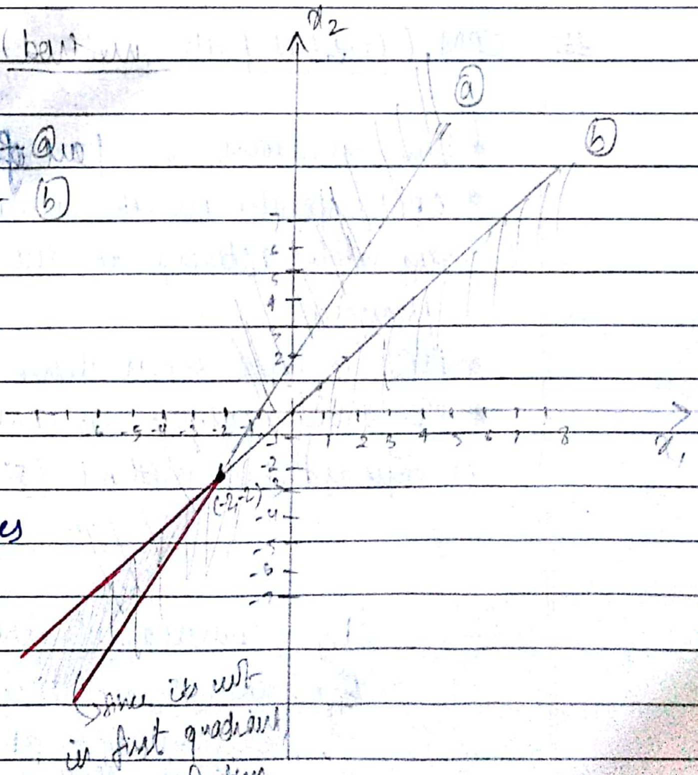
$\max z = x_1 + x_2$

s.t. $2x_1 - x_2 \leq -2$ — (a)

$x_1 - x_2 \geq 0$ — (b)

$x_1, x_2 \geq 0$

To check which side of the constraint line to consider, we check if ~~which side the~~ origin satisfies the inequality, if not we take the opposite side.



Since it is not in first quadrant so no solution.