

## Step-1

*Feasible set:* A feasible set is composed of the solutions to a family of linear inequalities, and a feasible point maximizes or minimizes a certain cost function.

## Step-2

To show that following problem is feasible but unbounded.

Maximize:  $x + y$

Subject to:

$$-3x + 2y \leq -1$$

$$x - y \leq 2$$

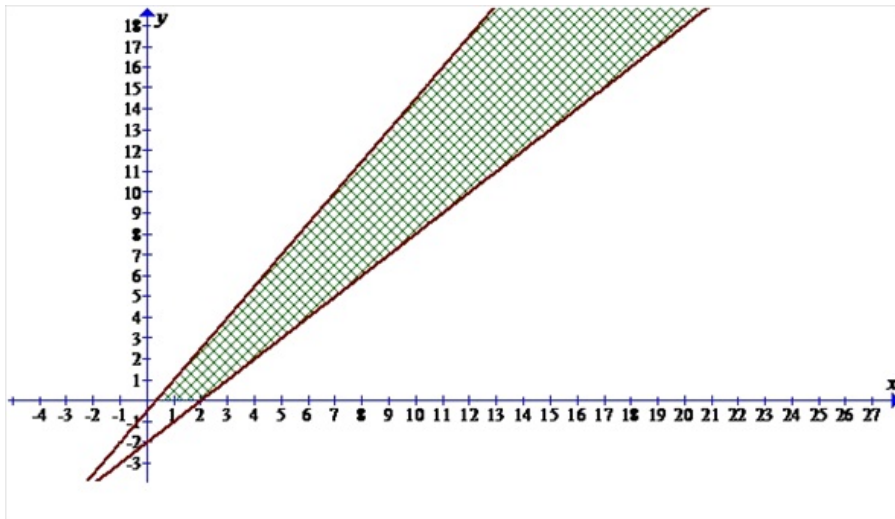
$$x \geq 0$$

$$y \geq 0$$

This implies that it has no optimal solution.

## Step-3

Following sketch gives the feasible region:



Here shaded region shows that the feasible region is unbounded so, it contains no optimal solution.

## Step-4

Therefore, unbounded feasible region exists for the given problem.

