

Concepts to be studied from the lectures only!

→ We must solve some questions for our practice.

Procedure is to use the given constraints and values, to create a primal problem of linear Programming and then use that primal problem for getting various eq<sup>n</sup> and constraints. Based on that we draft the graphical sol.

→ The corner points from the graph are taken, and value is checked on those points, to find the best value.

### Ques: Example Problem 2

A company makes chairs and tables. A chair takes 1 hour to assemble and 2 hours to finish. A table takes 2 hours to assemble and 1 hour to finish. The company has a total of 100 assembly hours and 110 finishing hours available per week. If the profit is \$20 per chair and \$30 per table, how many of each should the company produce to maximize profit?

→  $x \rightarrow$  chairs       $y \rightarrow$  tables

for assembling part → 1 hr for a chair.  $\Rightarrow x + 2y \leq 100$  - ①  
 we have 100 hrs      2 hrs for a table.  
 for assembly.

for finishing part → 2 hrs for finishing a chair  
 we have 110 hrs      1 hr for finishing a table.  
 for assembly.  $\Rightarrow 2x + y \leq 110$ . - ②

Nonnegativity constraint  $\Rightarrow x \geq 0$  and  $y \geq 0$

Nullity constraint  $\Rightarrow x \geq 0$  and  $y \geq 0$

for profit condition  $\Rightarrow 20x + 30y$  { The optimization function.

Aim: Maximize  $20x + 30y$

$$x + 2y \leq 100 \quad x \geq 0$$

$$2x + y \leq 110 \quad y \geq 0$$

→ Feasible solution is always "CONVEX".

