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IE 3015
- Operation Research -
Quiz #1

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Q11 Wild West produces two types of cowboy hats. A Type I hat requires three times as much labor time as Type 2. If the all available labor time is dedicated to Type 2 alone, the company can produce a total 450 Type 2 hats a day. The market limits for the two types are 100 and 300 hats per day for Type I and Type 2 respectively. The profit 8$ per Type I and 5$ per Type 2 Let. Determine the number of hats of each type that would maximize profit.

i. Build a mathematical model of the problem

ii. Solve graphically

soln i.) let Type I → x_1
let Type 2 → x_2

$x_1, x_2 \in Z^+$

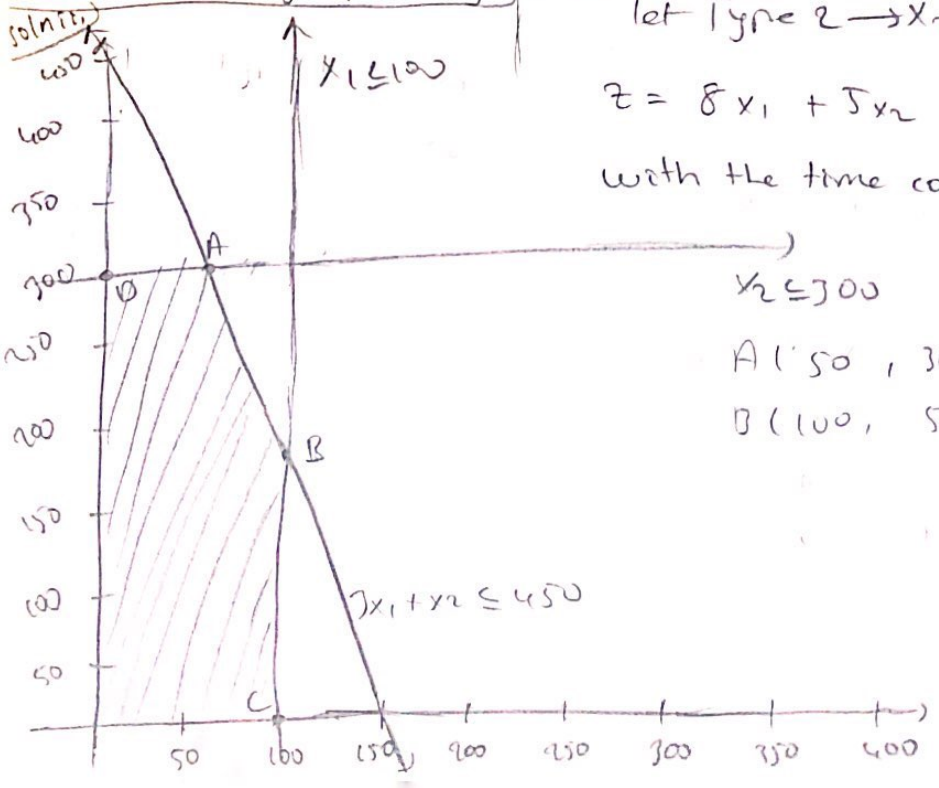
$Z = 8x_1 + 5x_2$ maximize

with the time constraint $3x_1 + x_2 \leq 450$

$x_1 \leq 100$

$x_2 \leq 300$

soln ii.)



A (50, 300)

B (100, 50)

as we approach to the maximized solution

Type 1 = 50

Type 2 = 300

Profit = 1900 $