I am aware that any forms of cheating in this exam will result in a zero grade and a disciplinary investigation. I accept all rules and regulations regarding online exams. I give permission for the processing of my personal data as stated in the Clarification Text provided on the Faculty of Engineering website."

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Q1: Wild west produces two types of cowboy hats. A type 1 hat requires three times as much labor time as type 2. If all the available labor time is dedicated to type 2 alone, the company can produce a total of 450 type 2 hats a day. The market limits for the two types are 100 and 300 hats per day for Type 1 and Type 2, respectively. The profit is 8$ per type 1 hat and 5$ per type 2 hat. Determine the number of hats of each type that would maximize profit

1-) Build the mathematical model of the problem

2-) Solve the problem graphically

A:

x_1 = type 1 hat

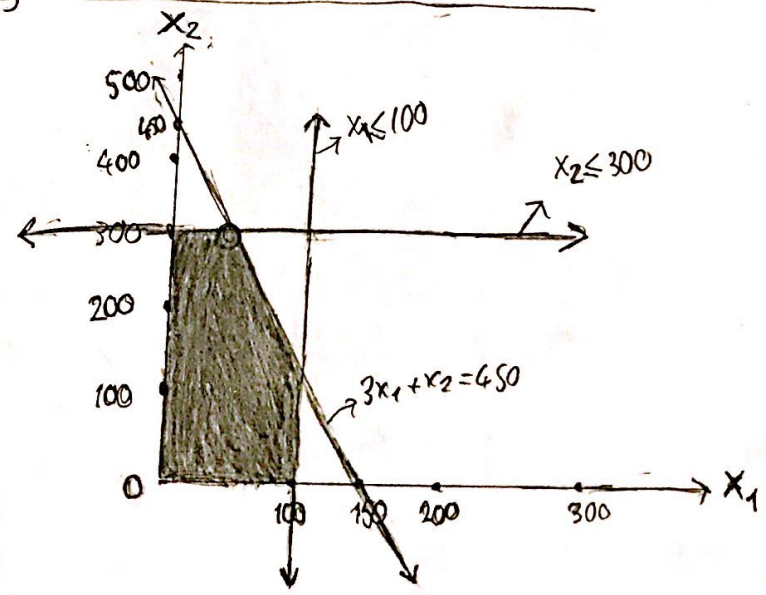
x_2 = type 2 hat

maximize profit $z = 8x_1 + 5x_2$

$x_1 \leq 100$

$x_2 \leq 300$

$3x_1 + x_2 = 450$



x_1	x_2	z
~~100~~	~~150~~	~~$8x_1+5x_2 = 1550$ \$~~
50	300	$8x_1 + 5x_2 = 1900$ \$