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 exam. I give permission of my personal data as stated in the Clarification Text provided on the Faculty of Engineering website

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1) Wild West produces two types of cowboy hats. A type 1 hat requires three times as much labor time as a type 2. If the all avaible labor time is dedicated to Type 2 alone, the company can produce a total of 450 Type 2 hats a day. The marked 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.

i. Build the mathematical model of the problem

ii. Solve the problem graphically

i. $\text{Max } Z = 8x_1 + 5x_2$

$3x_1 + x_2 \leq 450$

$x_1 \leq 100$

$x_2 \leq 300$

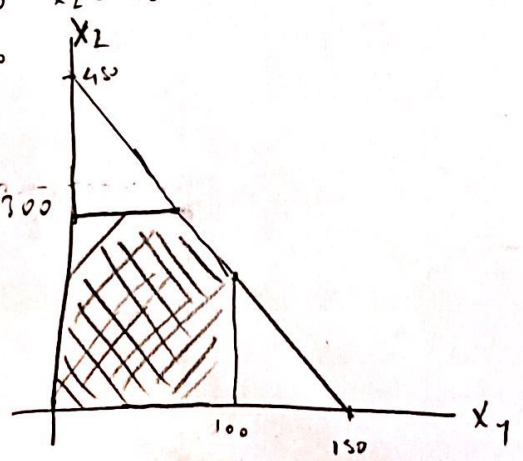
$x_1, x_2 \geq 0$

ii. $3x_1 + x_2 \leq 450$

$x_1 = 150$ $x_2 = 450$

$x_1 = 100$

$x_2 = 300$



$\max Z = 8x_1 + 5x_2$ $x_1 = 50$ $x_2 = 300$

$MAXZ = 8(50) + 5(300) = 1900$