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

Abdullah Enes Dizer
150113880

Q1/ 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 available labor time 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 for hats.
Determine the number of hats of each type that would Maximize profit

i. Build the matematical model of the problem
ii. Solve the problem graphically.

i/

x_1 = the profit per day type1 hat.
x_2 = the profit per day type 2 hat.

(hats per day for type 1 and type 2 respectively. The profit $8 per Type 1 hat and $5 per Type 2.)

Maximize

$Z = 8x_1 + 5x_2$

$3x_1 + x_2 \leq 450$ → $x_1=0, x_2=450$; $x_1=150, x_2=0$

$x_1 \leq 100 \longrightarrow x_1 = 100$

$x_2 \leq 300 \rightarrow x_2 = 300$

$x_1, x_2 \geq 0 \rightarrow x_1 \geq 0$, $x_2 \geq 0$

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

$= 8 \cdot (50) + 5 \cdot (300)$
$= 400 + 1500$
$= 1900$ $ profit per day

ii/