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 clarification text provided on the Faculty of Engineering website.

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Q1

Wild west produces two types of cowboy hats. type1 req 3 times than type2. If all labor dedicated to type2 the company produce total 450 type2 hats. Maket limits are 100 and 300 hats per day for Type1 and Type2 respectively. The profit is $8 for hat Type1 and 5$ per type 2 hat. Maximize the profit. I. Mathematical Model II. solve problem graphically

Q1) Solution

type1 = takes 3L to produce
type 2 = takes L to produce
} total source = 450L

x = # of type1 produced
y = " " type2 "

I) Math Model

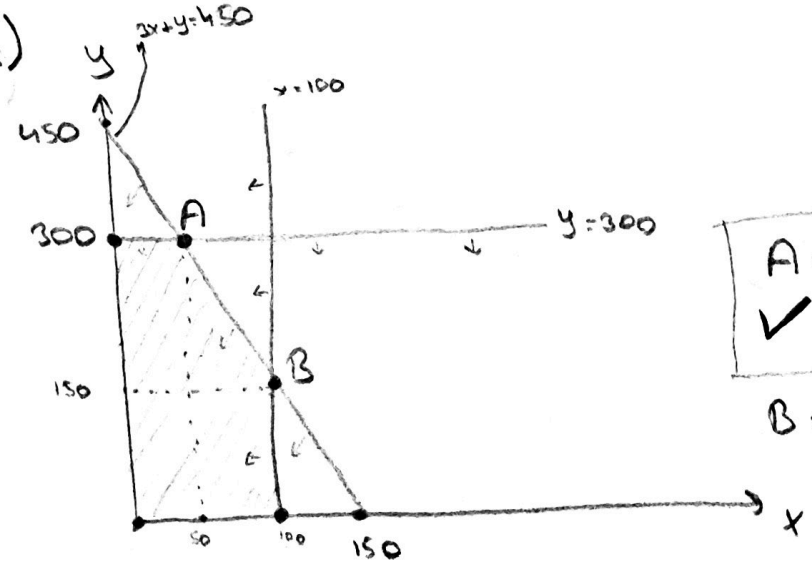
$3x + y \leq 450$

$x \leq 100$

$y \leq 300$

Objective function $\{ (Z = 8x + 5y)$ Max

II)



Calculation of coordinates of dots

$y=300$ → $3x + 300 = 450$ → $x = 50$

$x=100$ → $3 \cdot 100 + y = 450$ → $y = 150$

$A = (50, 300)$

$Z_A = 8 \cdot 50 + 5 \cdot 300 = 1900\$$
(400 + 1500)

$B = (100, 150)$

$Z_B = 8 \cdot 100 + 5 \cdot 150 = 1550\$$
(800 + 750)

Conclusion

In order for the firm to make the most profit, it has to produce 50 type1 hats and 300 type2 hats. profit would be 1900$