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[Signature]

Question: World West 2 types. A type 1 rep 3 hrs as much as a type 2. Since type 2's are yellow, 450 have yellow. Market limits type 1 100 type 2 300 per day. the profit Type 1 is Type 2 5

- i.) Determine math. model problem
ii.) solve graphically.

Answers: i.) let's say decisionable variables
Type 1 = x_1
Type 2 = x_2

Objective Function: $3x_1 + 5x_2 \rightarrow$ we should maximize it

Con. Function:

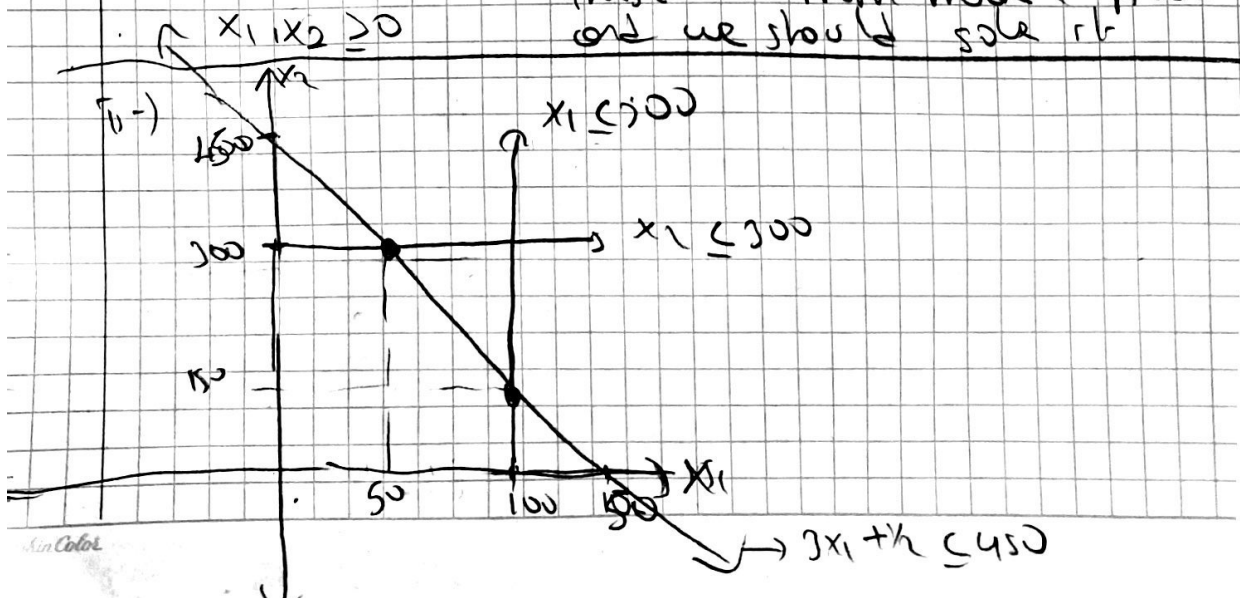
$$3x_1 + x_2 \leq 450$$

$$x_1 \leq 100$$

$$x_2 \leq 300$$

$$x_1, x_2 \geq 0$$

these are math model problem and we should solve it



(ii) Functions:

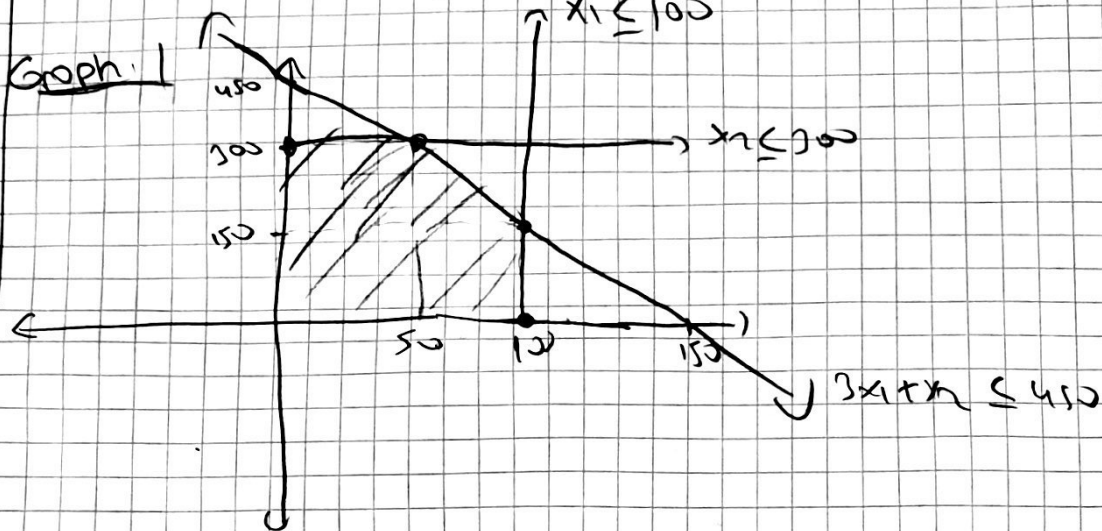
$$3x_1 + x_2 \leq 450$$

$$x_1 \leq 100$$

$$x_2 \leq 300$$

$$x_1, x_2 \geq 0$$

$$P = 8x_1 + 5x_2$$



The area that I point is the area where we can find the maximum of the profit. If the region is bounded we should check all vertices and try one by one. And greatest score is the answer.

vertices		$Z = 8x_1 + 5x_2$
x_1	x_2	
100	0	$Z = 800 //$
100	150	$Z = 1550 //$
50	300	$Z = 1900 //$ → it is profit
0	300	$Z = 1500 //$

Because of this, for the maximum profit we should produce 50 Type 1 hats and 300 Type 2 hats.

$$\text{Type 1} = x_1 = 50 //$$

$$\text{Type 2} = x_2 = 300 //$$