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Q1) Wild west produces two types of cowboy hats. A type 1 hat repuires three times as much labor time as a type 2. If all available time is dedicated to Type 2 alone, the company can produce a total of 450 Type 2 hats a day. The limits for two types are 100, 300, Type 1 Type 2 respectively. The profit $8 Type 1, $5 Type 2. max profit?

i)

	hour	profit
type 1 → x_1	3	8
type 2 → x_2	1	5

find max profit function

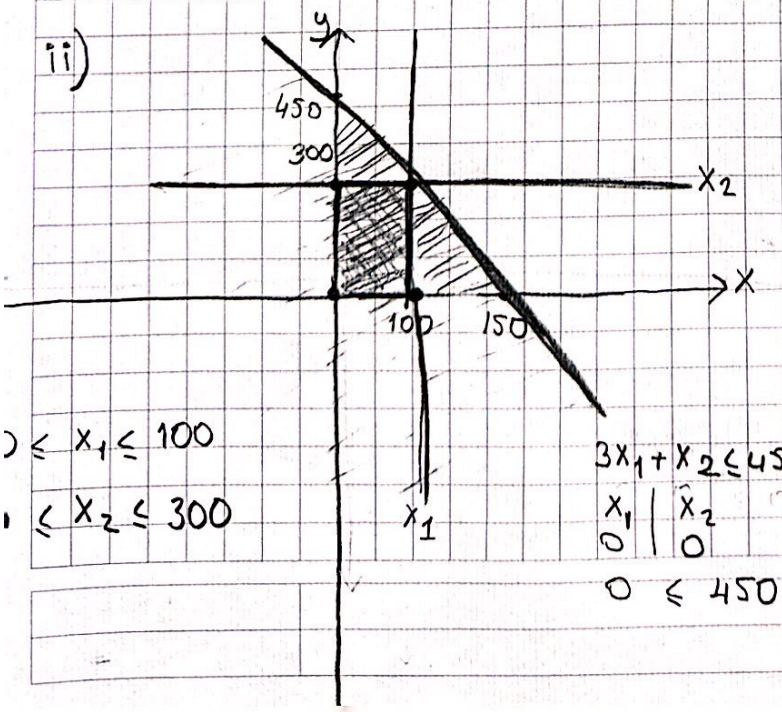
$$z = 8x_1 + 5x_2$$

$x_1 \leq 100$
$x_2 \leq 300$
} (max number of hats)

$x_1 \geq 0$
$x_2 \geq 0$

$3x_1 + x_2 \leq 450$ (labor time)

ii)



$0 \leq x_1 \leq 100$

$0 \leq x_2 \leq 300$

$3x_1 + x_2 \leq 450$

x_1	x_2
0	450

x_2	x_1
0	150

$8x_1 + 5x_2 = z$	cordinates
0 ←	(0,0)
1500 ←	(0,300)
800 ←	(100,0)
2300 ←	(100,300)

$3x_1 + x_2 \leq 450$

x_1	x_2
0	0

$0 \leq 450$ ✓

max profit is 2300