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N.Erdem

Q1) 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 is dedicated to Type 2 alone, company can produce a total of 450 Type 2 hats a day. The market 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 mathematical model of the problem

ii. Solve the problem graphically

Type 1 = x_1 , Type 2 = x_2

(maximize) $z = 8x_1 + 5x_2 \Rightarrow \frac{z-5x_2}{8} = x_1$

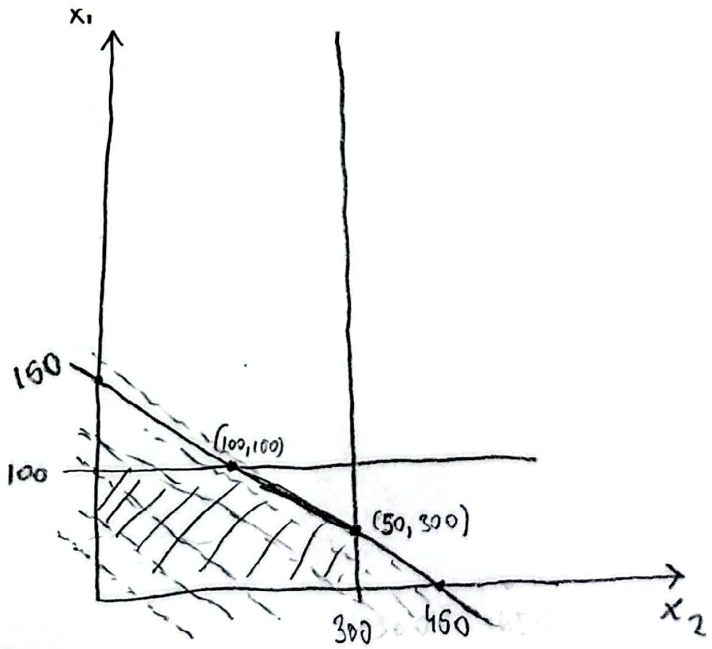
$n = -\frac{5}{8}$

constraints: $x_1 \leq 100$

$x_2 \leq 300$

$3x_1 + x_2 \leq 450$

x_1	x_2	$(8x_1+5x_2)$
100	150	$\Rightarrow$ 800+750 = 1550
✓ 50	300	$\Rightarrow$ 400+1500 = 1900



to maximize the profit, the company should sell 50 Type 1 hat and 300 Type 2 hat.