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Bedirhan Sorhan
150119602

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, the 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 dollar per type hat and 5 dollar per type 2 hat. Determine the number of hats of each type that would maximize profit.

I. Build mathematically model

II. Solve graphically

I)

Desicion variable

X_1 = number of type 1 hats
X_2 = number of type 2 hats

objective function

$Z = 8X_1 + 5X_2$

constrains

$3X_1 + X_2 \leq 450$

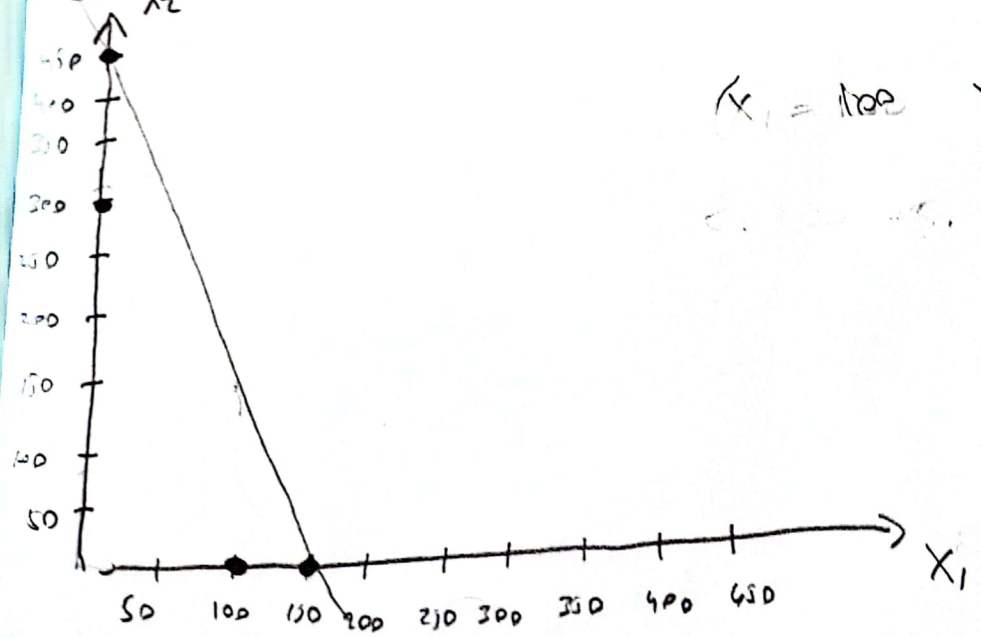
$X_1 \leq 100$

$X_2 \leq 300$

$X_1, X_2 \geq 0$

II)

$3X_1 + X_2 = 450$; $X_1 = 0$, $X_2 = 450$
$X_1 = 150$, $X_2 = 0$



($X_1 = 100$ X_2 ...)