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IE Quiz 1
3035

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Question

1. Wild West produces two types of cowboy hats. A type 1 hat requires 3 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 per day type 1 hat and $5 per Type 2 hat. Determine the num of hats that would max profit.

i. Build the mat. model of prob.

ii. Solve the problem graphically.

Solution.

$x_1 \rightarrow$ type 1 hat

$x_2 \rightarrow$ type 2 hats

Objectives ~~gives~~ function:

maximize: $8x_1 + 5x_2$

Constraints:

$3x_1 + x_2 \leq 450$

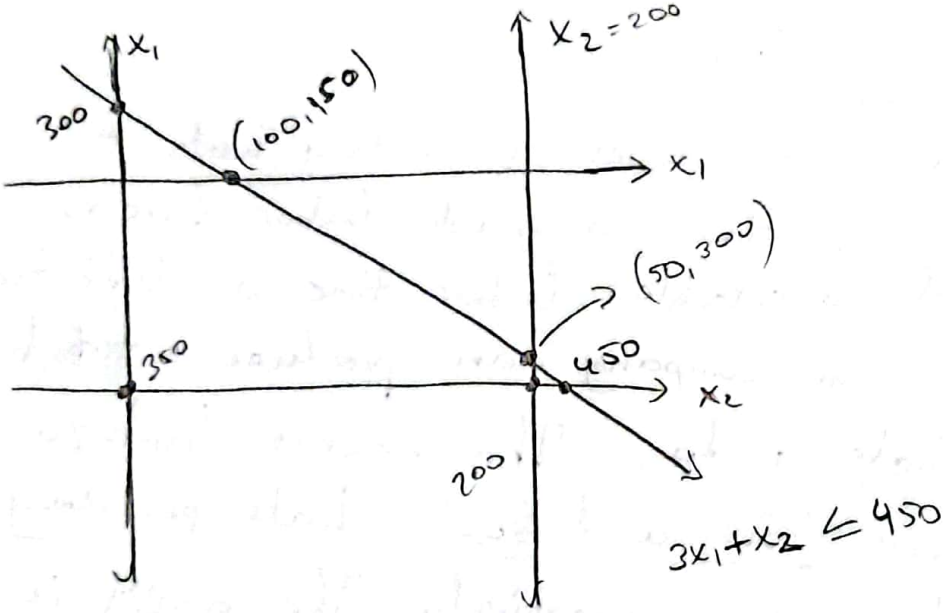
$x_1 \leq 100$

$x_2 \leq 300$

Type 2 need T hours

available hours: 450 T

$3Tx_1 + Tx_2 \leq 450T$



Optimal point is

$x_1 = 50$

$x_2 = 300$

Optimal value

1900 $

$150 + 300 \leq 450$

$3 \cdot 50$

$8x_1 + 5x_2$

$8 \cdot 50 + 5 \cdot 300$

$400 + 1500 = 1900$ $