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ISO1200S6
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Question: 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 limit for the two types of are 100 and 300 hats per day for T1 and T2. The profit is \$8 per T1 and 5\$ per T2. Determine the number of hats of each type that would maximize profit.

- Build the mathematical model of the problem
- Solve the problem graphically.

- Decision vars.
- Objective
- Constraints

for T1 $\rightarrow 3X$ time needed
for T2 $\rightarrow X$ time needed

T1 \rightarrow amount of T1
T2 \rightarrow amount of T2

$$z = 8T_1 + 5T_2 \rightarrow \text{maximize profit}$$

equation ① $T_1 \leq 100 \rightarrow$ limit of T1 per day

" ② $T_2 \leq 300 \rightarrow$ " " T2 "

" ③ $3T_1 + T_2 \leq 450 \rightarrow$ daily total limit

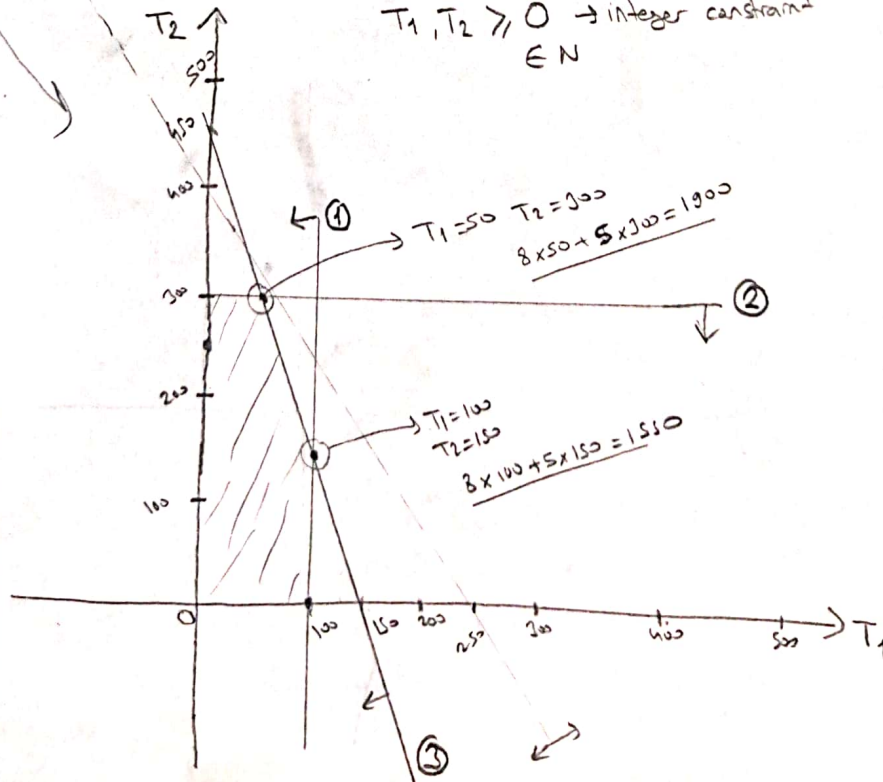
$T_1, T_2 \geq 0 \rightarrow$ integer constraint
 $\in \mathbb{N}$

$T_1 = 100$

$T_2 = 300$

$T_1 = 150 \quad T_2 = 150$

Z
function



Result is

to maximize $z = 8T_1 + 5T_2$

$T_1 = 50$

$T_2 = 300$

$z = 1900 //$