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1. 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 two types are 100 and 300 hats per day. The profit is $8 Type 1 and $5 Type 2. Determine the number of hats of each type that would maximize profit

i. Build the mathematical model of the problem

ii. Solve the problem graphically

x_1 = Type 1 hat

x_2 = Type 2 hat

$3x_1 + x_2 \leq 450$

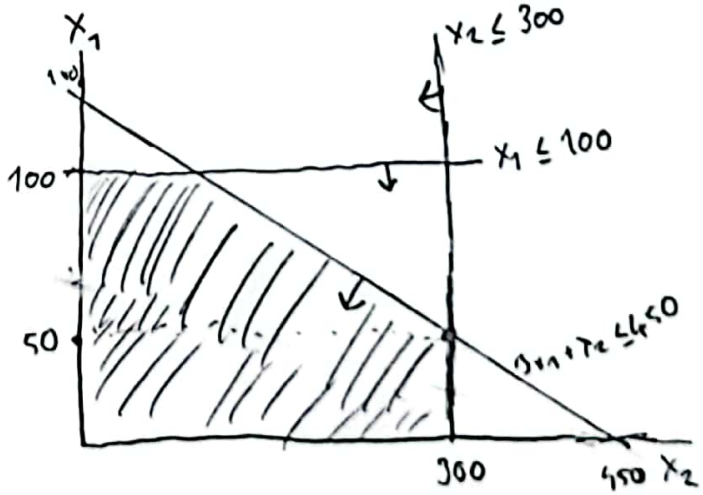
$x_1 \leq 100$

$x_2 \leq 300$

$x_1, x_2 \geq 0$

maximize formula

$Z = 8x_1 + 5x_2$



Let $x_1 = 50$, $x_2 = 300$

$Z = 8 \times 50 + 5 \times 300 = 400 + 1500 = 1900$ $ profit

Optimal solution