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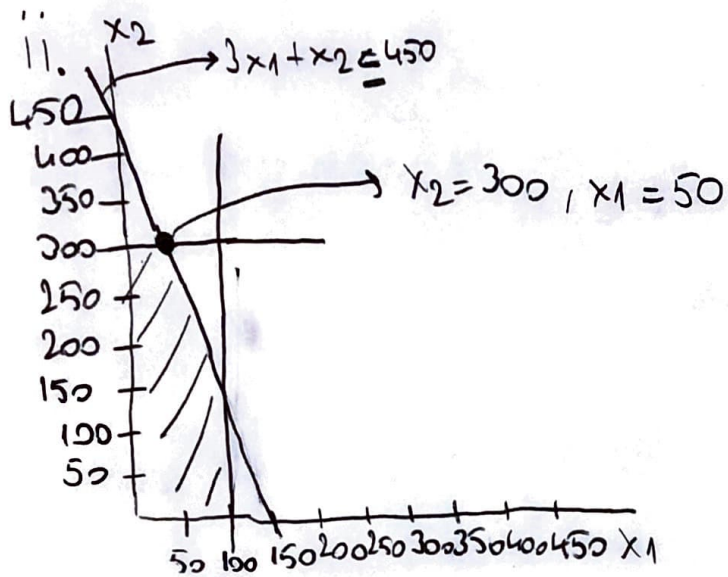
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Q1. Wild west produces two types of cowboy hats. A type 1 hat requires three times as much labor time as type 2. If the all available labor time is dedicated to Type 2 alone, the company can produce a total of 450 type 2 hats a day. The market limits for the two types are 100 and 300 hats per day for Type 1 and Type 2 respectively. The profit is \$8 per Type 1 hat and \$5 per Type 2 hat. Determine the num of hats of each type that would maximize profit.

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

Answer:

$$\begin{aligned} \text{i. } x_1 &= \text{hat}_1 \\ x_2 &= \text{hat}_2 \end{aligned} \quad \begin{aligned} &\text{Maximize } \overset{\text{profit}}{z} = 8x_1 + 5x_2 \\ &3x_1 + x_2 \leq 450 \\ &x_1 \leq 100 \\ &x_2 \leq 300 \end{aligned}$$



$$z = 8 \cdot x_1 + 5 \cdot x_2$$

$$z = 8 \cdot (50) + 5 \cdot (300) = \$1900$$

400 1500