Opres Quiz I IE 3035 Quiz I April 26, 2023

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Question

Wild west produces cowboy hats. Type requires three times labor time as type 2. If all time dedicated to Type 2 alone we can produce 450 hats a day. The market limits are 100, 300 for respectively. The profit 8$ for Type 1 5$ for Type 2 maximize the profit.

I. Build mathmetical model of problem.

II. solve the problem graphically.

1) I.) Type 2 x 3 labor time = Type 1

We will maximize profit.

let num of Type 1 produced be x

let num of Type 2 produced be y

Objective function:

P(profit) = 8x + 5y → maximize

Constraints

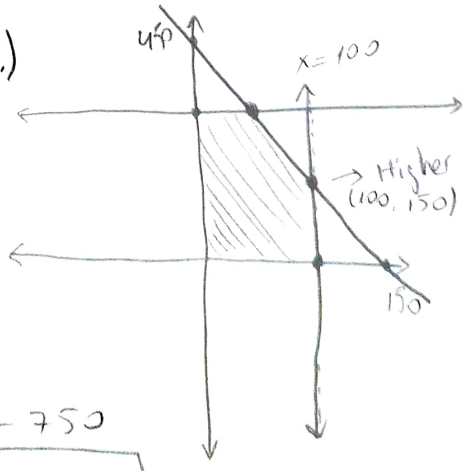
$3x + y \leq 450$ ← due to the labor time

$x \leq 100$

$y \leq 300$

$\frac{450}{-\frac{3}{15}} \left| \frac{3}{150} \right.$

II.)



Higher cont of x will be advantage for us.

$8x + 5y = Profit$

$8 \cdot 100 + 5 \cdot 150 = 800 + 750$

$\begin{array}{r} 800 \\ +\ 750 \\ \hline 1550 \end{array}$

1550

$x = 100$

$3x + y = 450$

$300 + y = 450$

$y = 150$