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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 Type2 alone, the company can produce a total of 450 Type2 hats a day. The market limits for the two types are 100 and 300 hats per day for Type1 and 2 respectively. The profit is $8 per Type1 hat and $5 per Type 2 hat. 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.

Answer:

X_1 = Type 1 hat

X_2 = Type 2 hat

X	Y
0	450
150	0

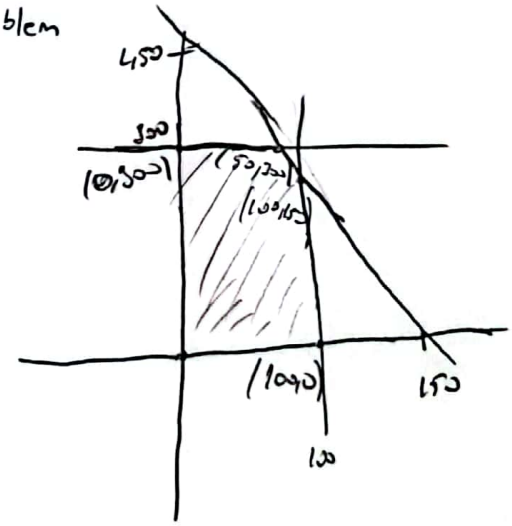
maximize $z = 8x_1 + 5x_2$

such that $3x_1 + x_2 \leq 450$

$x_1 \leq 100$

$x_2 \leq 300$

$x_1 \geq 0, x_2 \geq 0$



$3x_1 + x_2 = 450$

$x_1 = 100$

$x_2 = 150$

$3x_1 + x_2 = 450$

$x_2 = 300$

$x_1 = 50$

(x,y)	$z = 8x_1 + 5x_2$
(0,300)	1500
(100,0)	800
(100,150)	1550
(50,300)	1900

maximize = 1900