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Question 1:

Will 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 markets limit for the two types are 100 and 300 hats per day Type 1 and Type 2 resp. Profit \$8 per Type 1. \$5 per Type 2. Determine max. profit.

i) build the math. expression

ii) solve graphically.

$x_1 \rightarrow \text{Type 1}$
 $x_2 \rightarrow \text{Type 2}$

$$z = 8x_1 + 5x_2$$

(constraints) $\rightarrow 2x_1 + x_2 \leq 450$

$$x_1 \leq 100$$

$$x_2 \leq 300$$

$$z = 8(100) + 5(300)$$

$$z = 800 + 1500$$

$$z = 2300$$

Optimal Point is = $x_1 = 100$
 $x_2 = 300$

Optimal Value is = 2300

