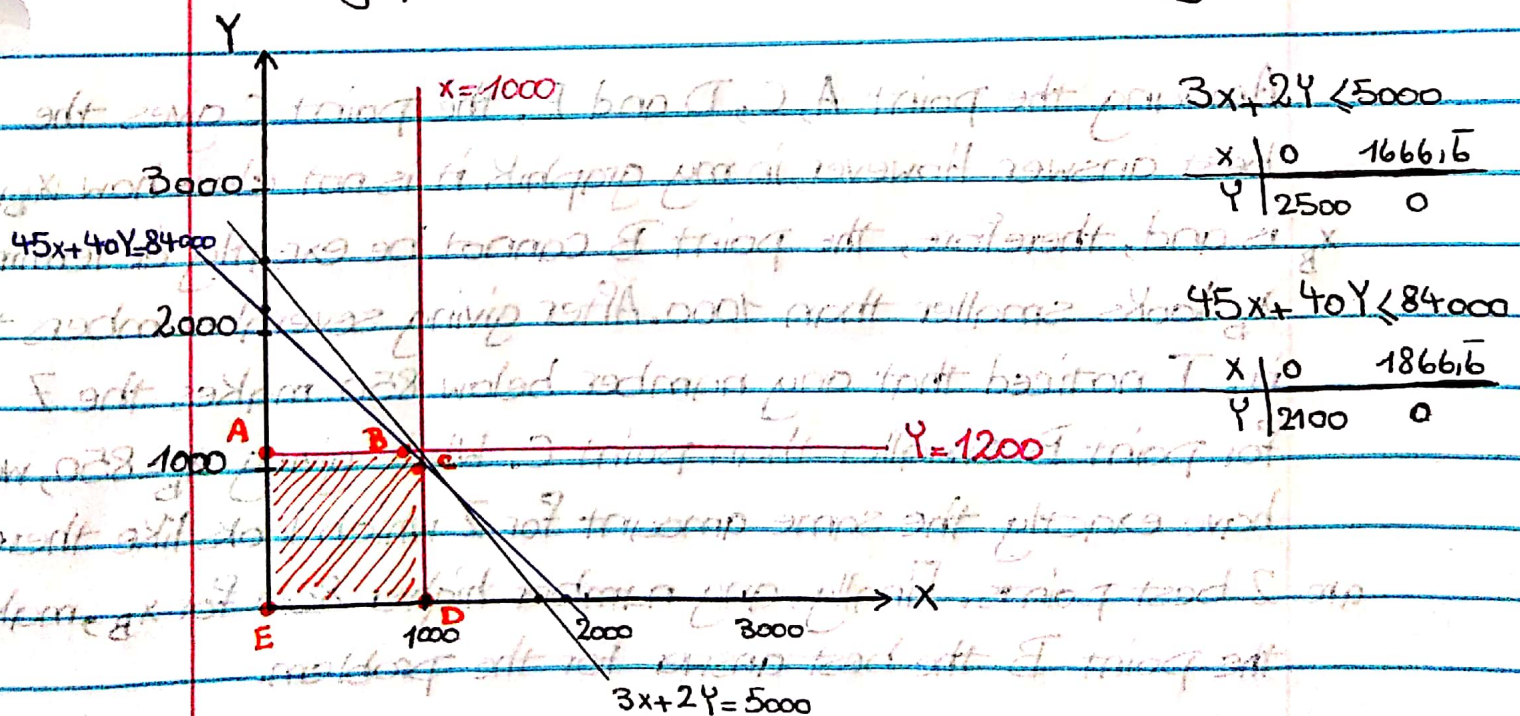


Assignment 3:

The linear program of this question was:

$$\begin{aligned} \text{Maximize } Z &= 32x + 24y \\ \text{Subject to } 3x + 2y &\leq 5000 \\ 45x + 40y &\leq 84000 \\ x &\leq 1000 \\ y &\leq 1200 \\ x, y &\geq 0 \end{aligned}$$

The graphic of this LP looks like following:



According to LP and the graphic, the optimal answers are in the orange area. But, to find out which point maximizes $Z = 32x + 24y$, we have

There are 4 points in the graphic which are in the corners. The highest number for Z is the best answer:

$$A(0, 1200) \rightarrow Z = 28800$$

$$B(x_B, 1200) \rightarrow Z = ?$$

$$C(1000, 1000) \rightarrow Z = 56000$$

$$D(1000, 0) \rightarrow Z = 32000$$

$$E(0, 0) \rightarrow Z = 0$$

Among the point A, C, D and E, the point C gives the best answer. However, in my graphic it is not clear how much x_B is and, therefore, the point B cannot be exactly determined. x_B looks smaller than 1000. After giving several numbers to it, I noticed that any number below 850 makes the Z for point B smaller than point C. While giving $x_B = 850$, we have exactly the same amount for Z which looks like there are 2 best points. Finally, any number higher 850 for x_B , makes the point B the best answer for the problem.