

## Linear programming: Homework

In this homework, we are going to solve a linear programming problem.

Continued from previous homework, we now have different constraints to the company. Recall that the total expense of the company is estimated by  $E = 1000P + NS + 350000$ , where  $P$  is the stock price,  $N$  is the number of employees and  $S$  is the salary of each employee.

1. For the relation of  $N$  and  $S$ :

$$\begin{cases} 0 \leq N \leq 200 \\ 0 \leq S \leq 40000 \\ 40000 \leq S + 200N \leq 60000 \end{cases}$$

- (a) Sketch the region for the system of inequalities.
  - (b) Find the minimum of  $NS$ .
2. Now the proposal states that the company expenses is proposed to be 2000000, and luckily it is approved by the employer. What will be the maximum residue (remaining budget) for the company in this proposal?
  3. If the company residue is around maximum, at most how many more employees could be hired using residue under certain salary?