Homework - 7

Q.1 Given points,

$x_1^+ = (3,5)$ $\quad x_1^- = (5,6)$

$x_2^+ = (5,3)$ $\quad x_2^- = (6,5)$

$x_3^+ = (6,6)$

$$Q = \begin{bmatrix} 2 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 2 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$$

For p, we have $c = 1$

$$p = \begin{bmatrix} 0 \\ 0 \\ 0 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \end{bmatrix} \quad \text{and} \quad h = \begin{bmatrix} -1 \\ -1 \\ -1 \\ -1 \\ 0 \\ 0 \\ 0 \\ 0 \end{bmatrix}$$

$$G = \begin{bmatrix} -3 & -5 & -1 & -1 & 0 & 0 & 0 & 0 \\ -5 & -3 & -1 & 0 & -1 & 0 & 0 & 0 \\ -6 & -6 & -1 & 0 & 0 & -1 & 0 & 0 \\ 5 & 6 & 1 & 0 & 0 & 0 & -1 & 0 \\ 6 & 5 & 1 & 0 & 0 & 0 & 0 & -1 \\ 0 & 0 & 0 & -1 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & -1 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -1 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -1 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -1 \end{bmatrix}$$

For x, From Q_2 I got following values,

$w_1 = -0.4999$

$w_2 = -0.4999$

$b = 4.9999$

$$x = \begin{bmatrix} w_1 \\ w_2 \\ b \\ \varepsilon_1^+ \\ \varepsilon_2^+ \\ \varepsilon_3^+ \\ \varepsilon_1^- \\ \varepsilon_2^- \end{bmatrix} = \begin{bmatrix} -0.4999 \\ -0.4999 \\ 4.9999 \\ \varepsilon_1^+ \\ \varepsilon_2^+ \\ \varepsilon_3^+ \\ \varepsilon_1^- \\ \varepsilon_2^- \end{bmatrix}$$