Given the following three-dimensional points and their actual labels:

$$\mathbf{x}_A = \begin{pmatrix} 1 \\ 1 \\ 0 \end{pmatrix} \quad , \quad y_A = -1$$

$$\mathbf{x}_B = \begin{pmatrix} 3 \\ 3 \\ 1 \end{pmatrix} \quad , \quad y_B = +1$$

$$\mathbf{x}_C = \begin{pmatrix} 4 \\ 3 \\ -1 \end{pmatrix} \quad , \quad y_C = +1$$

If we initial the vector of weights for each dimension (including w_0) as

$\tilde{\mathbf{w}} = \begin{pmatrix} -3 \\ 2 \\ 2 \\ 0 \end{pmatrix}$. What's the vector of weights using PLA until convergence?