1. Class $\omega_1$ has data points \{1, 2, 3\} while \{-5, -3, -2\} belong to class $\omega_2$.
   a) What are the augmented vectors?
   b) Show the solution region in the weight space.
   c) Starting with zero initial weights and using single sample perceptron algorithm, obtain a linear discriminant function that separates the two classes. Let $\eta = 1$.

2. Suppose we have the following two-dimensional points for categories $\omega_1$:
   \[
   \begin{bmatrix} 0 \\ 2 \end{bmatrix}, \begin{bmatrix} 2 \\ 0 \end{bmatrix} \quad \text{and} \quad \begin{bmatrix} 3 \\ 1 \end{bmatrix}, \begin{bmatrix} 2 \\ 4 \end{bmatrix}
   \]
   for class $\omega_2$. Construct a linear classifier by matrix pseudoinverse.