Exercise 1.1: McCulloch-Pitts Neural Net (5 Points)
Give for each of the Boolean functions a McCulloch-Pitts ANN that solves it.

a) \( f(x) = x_1 \overline{x_2} \overline{x_3} \lor \overline{x_1} x_3 \lor x_1 x_4. \)

b) \( g(x) = (x_1 \lor x_2) \land \overline{x_3} \lor (x_2 x_3) \land (x_4 x_5). \)

Exercise 1.2: Perceptron Classifier (5 Points)
A class \( C \subset \mathbb{R}^2 \) contains all points in the quadrangle with the vertices \((2, 0), (0, 0.5), (-2, 0), \) and \((0, -0.5)\). Construct an ANN with perceptrons that can decide whether an input vector \((x, y)\) is inside the quadrangle or not. Give the net and describe the construction, especially the calculation of the weight vectors.