LAHORE UNIVERSITY OF MANAGEMENT SCIENCES
Department of Electrical Engineering

EE 514 (CS 535) Machine Learning – Spring 2025
Quiz 2

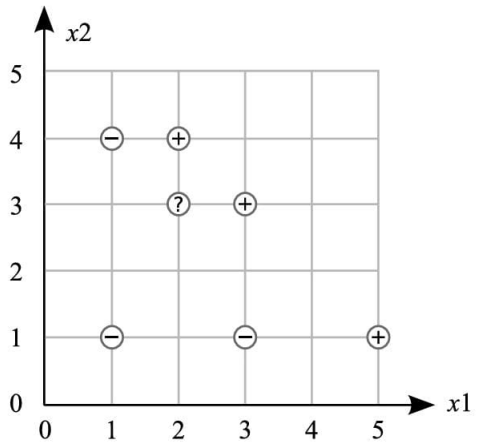
Name: _____

Campus ID: _____

Total Marks: 10
Time Duration: 10 minutes

Question 1 (5 marks)

The graph below shows the training data points for a binary classification task using K-Nearest Neighbors. Data points are negative [(1,1) (3,1) (1,4)] or positive [(2,4) (3,3) (5,1)]. A test point with unknown label is located at (2,3).



(a) [3 marks] Draw the 1-NN decision boundary on the plot using the labeled points only.

(b) [2 marks] How would 1-NN classify the unknown point (2,3).

Question 2 (2 marks)

Your TA Ahmad claims that kNN performance (in terms of accuracy or RMSE for example) scales (improves) with the input dimensionality. Do you agree with his claim? Why or why not?

Question 3 (3 marks)

For R^2 (i.e., 2D plane), plot three different graphs showing the locus of all points with Manhattan, Euclidean, and Chebyshev distance = 2 from **the point (1,1).**