

LAHORE UNIVERSITY OF MANAGEMENT SCIENCES
Department of Electrical Engineering

EE212 Mathematical Foundations of Machine Learning and Data Science
Quiz 02

Total Marks: 15

Time Duration: 45 minutes

Question 1 (2 marks)

Compute the ℓ_2 norm of the vector $u = (5, -2, 1, 6)$?

Question 2 (2 marks)

Express the RMS value of a n -vector u , using inner-product notation?

Question 3 (4 marks)

How would you interpret the correlation in the data if the correlation coefficient, ρ , between two features has the following value:

- $\rho = 0$
- $0 < \rho < 1$
- $-1 < \rho < 0$

Question 4 (3 marks)

Show that adding a constant to the mean of a vector has no effect on its standard deviation.

Question 5 (4 marks)

Convert the vector $u = (4, 2, -1)$ into a standardized vector with 0 mean and unity standard deviation.