

**Wipro Velocity**

Cognitive Data Science Program

**Session-1: MF-Post-Session Class Assignment**

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# Instructions for the assignment

## General Instructions

1. This is an informal assignment, with the last date of submission 24 Apr 2022.
2. This assignment doesn’t carry marks to accumulate in your final score however, it may impact your overall performance and activeness ratings.
3. Going through session recordings and shared session deck will certainly help in solving the assignment.
4. All steps in solving problems should be crisp and clear. It is not necessary to show rough work in assignment solution.
5. Any calculation tools (like calculators, pen-paper, excel sheets) can be used for calculations.

# Assignment Questions

## System of linear equations

1. Solve following pair of equations (substitution/elimination/ graphical/ matrix method):
   1. 3x+2y=16, 7x+y=19
   2. 4x+3y=-2, 8x-2y=12
   3. y=0.5x+2, y=-2x-3
   4. 3x+2y=3, x-y=-4
   5. 3x+4y=5, 2x-y=7

## Euclidean Space & Euclidean Distance

1. Find Euclidean Distance:
   1. A(2,4,5), B(5, 3, 9)
   2. A(3, 4), B(7, 12)
2. Prove that points A(0, 4), B(6, 2), and C(9, 1) are collinear.
3. Find the value of a, if the distance between the points P(3, -6) and Q(-3, a) is 10 units.
4. Find a relation between x and y such that the point (x, y) is equidistant from the points (7, 1) and (3, 5).
5. Show that the points (1, 7), (4, 2), (–1, –1) and (– 4, 4) are the vertices of a square.

## Vectors & Matrices

1. Find the vector v with magnitude 8 and the same direction as u=⟨3, 3)
2. Find the unit vector in the direction of the sum of the vectors and
3. Find a vector of magnitude 11 in the direction opposite to that of PQ υυυρ , where P and Q are the points (1, 3, 2) and (–1, 0, 8), respectively.
4. If the points (–1, –1, 2), (2, m, 5) and (3,11, 6) are collinear, find the value of m.
5. Compute

## Functions & Function Derivatives

1. Find derivatives of the following functions:
2. Find all the points of local minima and local maxima of the function

## Multivariate Functions

1. Find partial derivative,
2. Find partial derivative
3. Find and for the functions
4. What is gradient vector of the function
5. What is the gradient of the function

# Desirable Outcomes

## File format

1. Solution can be in either excel workbook MS word document.
2. Each of the question should be given proper question number
3. If there are multiple files, they to be zipped into single file with proper naming

## File Naming

1. The file name should be given in following format:

**MF <Your name><file number>**

1. If there are multiple files, all files should be given the same way as above and final zipped file name also should follow the same conventions.