Bahria University, Lahore

Course: Multivariable Calculus

Submission Date: 19/03/2023

Assignment# 1

Equation of Line:

1) Find vector equation, parametric equations of the line passing through the point (5,1,0) and perpendicular to the plane $2x - y + z = 1$. Also find two other points on the line.

2) Is the line through (-2,4,0) and (1,1,1) perpendicular to the line through (2,3,4) and (3,-1,8)?

Equation of Plane:

3) The plane through the point (1,7,2) and perpendicular to the line $x = 1 + t, y = 2t, z = 4 - 3t$.

4) The plane that passes through the point (6,0,-2) and contains the line $x = 4 - 2t, y = 3 + 5t, z = 7 + 4t$.

5) Find the equation of the plane containing the line $x = 3 + 2t, y = t,\ z = 8 - t$ and parallel to the plane $2x + 4y + 8z = 17$. Find x, y and z intercepts of the plane.

6) Find an equation for the plane consisting of all the points equidistant from the points $(1,0,-2)$ and $(3,4,0)$.

Distance from point to line & point to plane:

7) Find distance from a point (3,-2,7) to the plane $x = 4 + 3t, y = 3 - 2t, z = 7 + 7t$.

8) Find the distance between the given parallel planes

$$z = x + 2y + 1,\ 3x + 6y - 3z = 4$$