Instructions: Show Your Work!

1. (4 pts) Find parametric equations for the line through the point $(1, 0, -1)$ and perpendicular to the plane $3x + 2y + z = 0$.

2. (3 pts) Show that the two planes $x + y - z = 1$ and $2x - 3y + 4z = 7$ are neither parallel nor perpendicular.

3. (3 pts) Describe the level surfaces of the function $f(x, y, z) = 4 + 4x^2 - y^2 + 4z^2$. 


1. (4 pts) Find parametric equations for the line through the point \((-2, 2, 4)\) and perpendicular to the plane \(2x - y + 5z = 12\).

2. (3 pts) Show that the two planes \(x + y - z = 1\) and \(2x - 3y + 4z = 7\) are neither parallel nor perpendicular.

3. (3 pts) Describe the level surfaces of the function \(f(x, y, z) = 1 + x^2 - y^2 - z^2\).