

Name: _____

UIN: _____

Show all your work! Credit will not be given without work.

1. (3 points) Find the curl and the divergence of the vector field:

$$F(x, y, z) = (x + 3y - 5z)\mathbf{i} + (z - 3y)\mathbf{j} + (5x + 6y - z)\mathbf{k}.$$

2. (4 points) Find the surface area of the part of the plane $x + 2y + z = 4$ that lies inside the cylinder $x^2 + y^2 = 4$.
3. (3 points) Compute the surface integral

$$\int_S xz dS$$

where S is the triangle with vertices $(1, 0, 0)$, $(0, 1, 0)$ and $(0, 0, 1)$.