

Show all work. 5 points each.

1) Show that $\mathbf{F}(x, y, z) = \langle e^z, 1, xe^z \rangle$ is a conservative vector field and find a potential function f so $\nabla f = \mathbf{F}$.

2) Find the area of the part of the surface $z = 1 + 3x + 2y^2$ that lies above the triangle with vertices $(0, 0)$, $(0, 1)$ and $(2, 1)$.