1. Parametrize and give bounds for the portion of the paraboloid \( f(x,y) = 9 - x^2 - y^2 \) which lies above the rectangle in the \( xy \)-plane with vertices at the origin, \((1,0)\), \((1,2)\), and \((0,2)\).

2. Parametrize and give bounds for the rectangle in the plane \( z = 0 \) with vertices \((0,0,0)\), \((10,0,0)\), \((10,3,0)\), and \((0,3,0)\).

3. Parametrize and give bounds for the cylinder centered on the \( z \)-axis with radius 5 and between the planes \( z = 2 \) and \( z = 8 \).

4. Let \( \mathbf{F}(x,y,z) = \langle 2x, -z, y \rangle \), and let \( S \) be the surface from problem 2 with upward orientation. Evaluate \( \iint_S \mathbf{F} \cdot d\mathbf{S} \).
1. Parametrize and give bounds for the portion of the paraboloid \( f(y, z) = 9 - y^2 - z^2 \) which lies inside the cylinder \( y^2 + z^2 = 9 \).

2. Parametrize and give bounds for the parallelogram with vertices \((0,0,0), (10,0,0), (10,3,0), \) and \((0,3,0)\). [Yeah, it’s a duplicate of the Easier problem. I’m lame.]

3. Parametrize and give bounds for the cylinder centered on the \( x \)-axis with radius \( R \) and between the planes \( x = x_1 \) and \( x = x_2 \). [Notice the change in the problem from the printed version – it makes more sense this way, and this is what I intended in the first place].

4. Let \( \mathbf{F}(x, y, z) = \langle 2x, -z, y \rangle \), and let \( S \) be the surface from problem 3 with outward orientation. Evaluate \( \iint_S \mathbf{F} \cdot dS \).