Problem 1. Evaluate
\[ \int \int_{R} \left( \frac{x + y}{2} \right)^2 e^{y-x} \, dA, \]
where \( R \) is the region inside the square with vertices (0,0), (1,1), (0,2) and (-1,1).

Problem 2. Find the volume of the solid bounded by the graphs of equations \( x^2 + 3y^2 = z \)
and \( y^2 + z = 4 \).

Problem 3. Let \( C \) be the curve of intersection of the cylinder \( x^2 + y^2 = 2x \) and the plane \( x = z \). Find the circulation of the field \( F = y\hat{i} + (x - 1)\hat{j} \) around the curve \( C \).