Q1) If \( f(x, y, z) \) is a scalar valued function then show that \( \nabla \times (\nabla f(x, y, z)) = 0 \). (4)

Q2) Evaluate \( \int_C (x^2 + y^2)dx + xydy \) where \( C \) is part of circle \( x^2 + y^2 = 4 \) in the first quadrant only. (6)