1.) (5pts) Use Green’s theorem to evaluate the line integral \( \int_C \sqrt{x^2 + y^2} \, dx + \sqrt{x^2 + y^2} \, dy \) along the closed path \( C \) given by \( y = 0, \ x^2 + y^2 = 1, \ y \leq 0 \).

2.) (5pts) Find the surface area of the sphere \( x^2 + y^2 + z^2 = 16 \) that lies within the cylinder \( x^2 + y^2 = 4y \).