Assignment 13

1. Evaluate the double integral.

   (a) $\displaystyle\int_0^4 \int_0^{\sqrt{4y-y^2}} x^2 \, dxdy$

   (b) $f(x,y) = 9 - x^2 - y^2,\ R : x^2 - y^2 \leq 9,\ x \geq 0,\ y \geq 0$

   (c) $z = \ln(x^2 + y^2),\ z = 0,\ x^2 + y^2 \geq 1,\ x^2 + y^2 \leq 4$

2. Find the area of the surface.

   (a) $f(x,y) = 2 + \dfrac{2}{3}y^{3/2},\ R = \{(x,y) : 0 \leq x \leq 2,\ 0 \leq y \leq 2 - x\}$

   (b) The portion of the cone $z = 2\sqrt{x^2 + y^2}$ inside the cylinder $x^2 + y^2 = 4$