

## Math 201-142 Quiz 5

Name \_\_\_\_\_ Section \_\_\_ Id \_\_\_\_\_  
Serial# \_\_\_\_\_

Q1) Compute the integral

$$\int_0^1 \int_0^1 \int_{x^2}^1 12xze^{zy^2} dydx dz$$

by changing the order of integration to  $dx dy dz$  ( note: this is actually a 2d problem because there is no change in order for  $dz$  (points:5 +5)

Q2) Set up triple integrals that give the volume of a sphere of radius R in

- spherical coordinates
- in cylindrical coordinates. (point 5+5)

Q3) Find , using spherical coordinates, the volume of the solid outside the sphere of radius 1 centered at the origin and inside the sphere of radius 1 centered at (0,0,1)

( note:  $dv = \rho^2 \sin\phi d\rho d\phi d\theta$ ) (7 points for setting the integral+3 points for correct value of integral)