Math 001D Assignment 15.9 Ans_____

Instructions: Write complete solutions to the following problems in the space provided. Be sure to supply all the necessary steps that lead to your answers

1. Identify the surface whose equation is given.

a. $\rho^2\left(\sin^2\varphi\sin^2\theta+\cos^2\varphi\right)=4$ Ans_____

b. $\varphi=\pi/4$ Ans_____

c. $\rho=\sin\theta\sin\varphi$ Ans_____

2. Evaluate $\iiint_H (7-x^2-y^2)dV$, where H is part of a ball that occupies the second octant with radius 4 and centered at the origin. Ans_____

3. Use spherical coordinates to evaluate Ans_____

$\iiint_E xyz\, dV$, where E lies between the spheres $\rho = 1$ and $\rho = 4$ and above the cone $\varphi = \pi/3$.

4. Find the volume of the solid that lies within the sphere $x^2 + y^2 + z^2 = 9$, above the xy-plane, and below the cone $z = \sqrt{x^2 + y^2}$ Ans_____