DIRECTIONS To receive full credit, you must provide complete legible solutions to the following problems in the space provided. No Attached papers. Transfer all your answers to the space provided.

1. Consider the point. $(3,5,6)$
a. What is the projection of the point on the xy-plane?

Ans $\qquad$
b. What is the projection of the point on the yz-plane?

Ans $\qquad$
c. what is the projection of the point on the xz-plane?

Ans $\qquad$
d. Find the distance from the given point to the $x y$-plane

Ans $\qquad$
e. Find the distance from the given point to the xz-plane
f. Find the distance from the given point to the $x y$-plane
d. Find the distance from the given point to the yz-plane

Ans $\qquad$
2. Find an equation of a sphere if one of its diameters

Ans $\qquad$ has endpoints $(2,4,5)$ and $(6,8,9)$.
3. Find an equation of the largest sphere with center

Ans $\qquad$ $(8,4,9)$ that is contained in the first octant.
4. Consider the three points $P_{1}(0,0,0), P_{2}(2,3,1)$, and $P_{3}(-3,1,3)$
a. Show that the triangle with the given vertices is a right angle triangle
b. Find the area of the triangle in part a.

Ans $\qquad$
5. Find the volume of the solid that lies inside both

Ans spheres

$$
\begin{aligned}
& x^{2}+y^{2}+z^{2}+2 x-4 y+4 z+5=0 \\
& x^{2}+y^{2}+z^{2}=4
\end{aligned}
$$

6. Write an inequality that represents the following
a. The region between the $x z$ plane and the vertical plane $\mathrm{y}=4$.
b. The solid upper hemisphere of radius 3 centered at the origin

Ans $\qquad$

