Quiz 12.5 - 13.1 _____ Name: ________________________

Show all work and circle answers. 22 pts. Per.: _____

No Calculators.

1) Write the equation of the plane that contains the point (3, -4, 2) and the vectors **u** = 2**i** - **j** and **v** = 5**i** + **j** - **k**. (3 pts.)

2) For each equation, write the name of the object that *best* describes its graph in 3D. (1 pt. each)

Objects in Space

Point	Sphere	Elliptic Paraboloid
Vector	Ellipsoid	Hyperbolic Paraboloid
Line	Hyperboloid of One Sheet	Cylinder
Space Curve	Hyperboloid of Two Sheets	Circular Cylinder
Circular Helix	Circular Cone	Elliptic Cylinder
Elliptic Helix	Elliptic Cone	Parabolic Cylinder
Plane	Circular Paraboloid	Surface of Revolution

a) $\frac{x^2}{4}+\frac{y^2}{3}+\frac{z^2}{6}=1$ ______________

b) $\rho=6$ ______________

c) $y=x^2$ ______________

d) $\frac{x-4}{3}=\frac{y+7}{2}=\frac{z-9}{4}$ ______________

e) $\theta=\pi/3$ ______________

f) $\frac{(x-2)^2}{5}-\frac{(y+6)^2}{3}+\frac{(z-8)^2}{4}=1$ ______________

g) $\frac{(x-2)^2}{5}-\frac{(y+6)^2}{3}+\frac{(z-8)^2}{4}=0$ ______________

h) $\phi=\pi/6$ ______________

i) $\vec{r}(t)=e^t\hat{i}+t\hat{j}-\hat{k}$ ______________

j) $2x+3(y-8)+5(z+1)=0$ ______________

3) Convert each ordered triple as indicated. ("arc-trig" answers are okay for non-typical unit circle values.) (3 pts. each)

a) Rectangular (1, 1, 1) to Spherical

b) Spherical $\left(7, \frac{\pi}{4}, \frac{3\pi}{4}\right)$ to Cylindrical

c) Cylindrical (3, 0, 2) to Rectangular

Bonus) Write the equation for the surface generated by revolving the curve $xy = 2$ about the x-axis. (+2 pts.)