6b. From Part (a), we know that the norm of $\frac{v}{\|v\|}$ is one. But if $v=(3,4)$, then $\|v\|=5$. Hence, $u=\frac{v}{\|v\|}=(3/5, 4/5)$ has norm 1 and the same direction as v.

c. If $v=(-2,3,-6)$, its norm is $\sqrt{4+9+36}=\sqrt{49}=7$, so

$$u=\frac{-v}{\|v\|}=-\left(\frac{-2}{7}, \frac{3}{7}, \frac{-6}{7}\right)=\left(\frac{2}{7}, \frac{-3}{7}, \frac{6}{7}\right).$$

8. Note that $\|p-p_0\|=1$ iff $\|p-p_0\|^2=1$.
Thus, $(x-x_0)^2+(y-y_0)^2+(z-z_0)^2=1$.
The points (x,y,z) which satisfies the equations are just the points on the sphere of radius 1 with center (x_0,y_0,z_0); that is, they are all points whose distance from (x_0,y_0,z_0) is 1.