Please answer the following questions completely and clearly. An unsupported answer is worth few points.

(1) Find the equation of the sphere which contains the two antipodal points $P_1(3, 7, 1)$ and $P_2(2, 4, 6)$.

(2) Given vectors $\vec{u} = \langle 1, 4, 8 \rangle$ and $\vec{v} = \langle 3, 2, 1 \rangle$ find
   (a) The unit normal vector in the direction $\vec{v} - \vec{u}$
   
   (b) $\text{proj}_{\vec{u}} \vec{v}$

   (c) An explicit expression for the angle between $\vec{u}$ and $\vec{v}$