**Question 7** **(7 marks)**

Points $A$, $B$ have respective position vectors $\begin{pmatrix} 4 \\ 0 \\ 3 \end{pmatrix}$ and $\begin{pmatrix} 0 \\ -2 \\ 5 \end{pmatrix}$.

(a) Determine the vector equation for the sphere that has $\overline{AB}$ as its diameter. (3 marks)

If point $O$ is the origin, consider the plane that contains the vectors $\overrightarrow{OA}$ and $\overrightarrow{OB}$.

(b) Determine the vector equation for this plane in the form $\underset{\sim}{r} \cdot \underset{\sim}{n} = c$. (4 marks)