1 Let
5 points

$$\mathbf{v} = 3\mathbf{i} + 4\mathbf{k}, \quad \text{and} \quad \mathbf{u} = \mathbf{i} + 2\mathbf{j} - 2\mathbf{k}.$$

(a) Find the cosine of the angle between $\mathbf{v}$ and $\mathbf{u}$.

(b) Find the vector $\text{proj}_{\mathbf{v}}\mathbf{u}$.

2 Suppose $\mathbf{u} \neq \mathbf{0}$, $\mathbf{u} \cdot \mathbf{v} = \mathbf{u} \cdot \mathbf{w}$, and $\mathbf{u} \times \mathbf{v} = \mathbf{u} \times \mathbf{w}$. Prove that $\mathbf{v} = \mathbf{w}$.
5 points