

Quiz 1

1. Find the center and radius of the sphere:

$$x^2 + y^2 + z^2 + 2x - 2y + 4z = 10.$$

2. Suppose that $\|\mathbf{u}\| = 3$ and $\|\mathbf{v}\| = 2$. Find $\mathbf{u} \cdot \mathbf{v}$, given that the angle between the two vectors is $\frac{\pi}{4}$.

3. Given the vectors:

$$\mathbf{u} = \langle 2, 1, -1 \rangle,$$

$$\mathbf{v} = \langle -3, 4, 1 \rangle$$

find $\mathbf{u} \times \mathbf{v}$ and $\mathbf{v} \times \mathbf{u}$.