1. Define an inner-product space over the real numbers and give an example.

2. State the Cauchy-Schwarz inequality for an inner-product space.

3. Normalize the vector A = (3,4) to make it a unit vector.

4. Given A = (1,0,0) and B = (0,1,0), are they orthonormal?

5. Find an orthonormal basis for the set of vectors A =(1,1) & and B=(-1,1).

6. Find a vector orthogonal to (2,1,0) in R^2 and compute their angle after normalization.

7. Compute an orthonormal basis for R^2 starting with (1,0) (0,1) and find the angle between the basis vectors.

8. Compute the distance between (1,0) and (0,1) in R? and verify the triangle inequality with (0,0).

9. Prove that orthogonal vectors satisfy the Pythagorean Theorem in an inner-product space.

10. Find a vector orthogonal to (0,1,-1) in R? Compute their angle after normalization.