

Zero Point Quiz #4

MA103 30 OCT 2025

Major Patrick Kuiper

Questions

Problem 1: Vector Relationships

Match each vector pair on the left with the correct relationship on the right.

Vectors	Relationship
(a) $\mathbf{u}_1 = \begin{bmatrix} 2 \\ 4 \end{bmatrix}$, $\mathbf{v}_1 = \begin{bmatrix} 1 \\ 2 \end{bmatrix}$	(i) Parallel
(b) $\mathbf{u}_2 = \begin{bmatrix} 3 \\ 0 \end{bmatrix}$, $\mathbf{v}_2 = \begin{bmatrix} 0 \\ 5 \end{bmatrix}$	(ii) Orthogonal (90° Apart)
(c) $\mathbf{u}_3 = \begin{bmatrix} 1 \\ 0 \end{bmatrix}$, $\mathbf{v}_3 = \begin{bmatrix} \frac{\sqrt{2}}{2} \\ \frac{\sqrt{2}}{2} \end{bmatrix}$	(iii) 45° Apart

Task: Match each vector pair (a–c) with the correct relationship (i–iii).

Problem 2: Matrix Multiplication and Inverse

Compute the following product and then find the inverse of the resulting matrix if it exists.

$$A = \begin{bmatrix} 2 & 3 \\ 1 & 4 \end{bmatrix}, \quad B = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$$

$$C = A \times B$$

Task:

1. Compute C .
2. Determine whether C has an inverse. If so, find C^{-1} .