

Section 1: Vectors in three dimensions

Exercise level 1

- The points M and N have position vectors $\overrightarrow{OM} = \begin{pmatrix} 3 \\ -1 \\ 2 \end{pmatrix}$ and $\overrightarrow{ON} = \begin{pmatrix} 2 \\ 0 \\ -4 \end{pmatrix}$
 - Find the vector \overrightarrow{MN} .
 - Find the magnitude of the vector \overrightarrow{MN} .
- Given that $\mathbf{p} = 2\mathbf{i} + \mathbf{j} - 3\mathbf{k}$ and $\mathbf{q} = 3\mathbf{i} - 2\mathbf{j} + 4\mathbf{k}$, find
 - $\mathbf{p} + \mathbf{q}$
 - $\mathbf{p} - \mathbf{q}$
 - $2\mathbf{p} + 3\mathbf{q}$
 - $2\mathbf{p} - 5\mathbf{q}$
- Three points are A (1, 2, 0), B (3, -1, 2) and C (-2, 4, 1).
 - Find \overrightarrow{AB} , \overrightarrow{BC} and \overrightarrow{CA} .
 - Find the magnitudes of each of \overrightarrow{AB} , \overrightarrow{BC} and \overrightarrow{CA} .
 - Find a unit vector in the direction of \overrightarrow{AB} .