

2 The points A and B have position vectors $\begin{pmatrix} 1 \\ -2 \\ 5 \end{pmatrix}$ and $\begin{pmatrix} -3 \\ -1 \\ 2 \end{pmatrix}$ respectively.

(i) Find the exact length of AB . [2]

(ii) Find the position vector of the midpoint of AB . [1]

The points P and Q have position vectors $\begin{pmatrix} 1 \\ 2 \\ 0 \end{pmatrix}$ and $\begin{pmatrix} 5 \\ 1 \\ 3 \end{pmatrix}$ respectively.

(iii) Show that $ABPQ$ is a parallelogram. [3]