



1. Relative to a fixed origin O , the points A and B have position vectors $\begin{pmatrix} 3 \\ 6 \end{pmatrix}$ and $\begin{pmatrix} -5 \\ 2 \end{pmatrix}$ respectively. Find,
 - a. The vector \overrightarrow{AB} (1)
 - b. $|\overrightarrow{AB}|$ (2)
 - c. The position vector of the mid-point of AB (2)
 - d. The position vector of the point C such that $OABC$ is a parallelogram (1)

Solutions

1a.

$\overrightarrow{AB} = \begin{pmatrix} -5 \\ 2 \end{pmatrix} - \begin{pmatrix} 3 \\ 6 \end{pmatrix} = \begin{pmatrix} -8 \\ -4 \end{pmatrix}$	M1
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1b.

$ \overrightarrow{AB} = \sqrt{64 + 16}$	M1
$= \sqrt{80}$	M1
$= 4\sqrt{5}$	

1c.

$\overrightarrow{OC} + \frac{1}{2}\overrightarrow{AB}$	M1
$= \begin{pmatrix} 3 \\ 6 \end{pmatrix} + \frac{1}{2}\begin{pmatrix} -8 \\ -4 \end{pmatrix}$	
$= \begin{pmatrix} -1 \\ 4 \end{pmatrix}$	M1

1d.

$\overrightarrow{OC} = \overrightarrow{AB}$ Position Vector = $\begin{pmatrix} -8 \\ -4 \end{pmatrix}$	M1
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