11.4) Position vectors

Worked example

The points A and B have coordinates $(2,5)$ and $(6,13)$ respectively.

Find, in terms of $\boldsymbol{i}$ and $\boldsymbol{j}$:

a) The position vector of A

b) The position vector of B

c) The vector $\overrightarrow{AB}$

Your turn

The points A and B have coordinates $(3,4)$ and $(11,2)$ respectively.

Find, in terms of $\boldsymbol{i}$ and $\boldsymbol{j}$:

a) The position vector of A

b) The position vector of B

c) The vector $\overrightarrow{AB}$

a) $\overrightarrow{OA} = 3\boldsymbol{i} + 4\boldsymbol{j}$

b) $\overrightarrow{OB} = 11\boldsymbol{i} + 2\boldsymbol{j}$

c) $\overrightarrow{AB} = 8\boldsymbol{i} - 2\boldsymbol{j}$

Worked example

$\overrightarrow{OA} = 4\boldsymbol{i} + 3\boldsymbol{j}$ and $\overrightarrow{AB} = 2\boldsymbol{i} - 5\boldsymbol{j}$. Find:

a) The position vector of B.

b) The exact value of $\left|\overrightarrow{OB}\right|$ in simplified surd form.

Your turn

$\overrightarrow{OA} = 5\boldsymbol{i} - 2\boldsymbol{j}$ and $\overrightarrow{AB} = 3\boldsymbol{i} + 4\boldsymbol{j}$. Find:

a) The position vector of B.

b) The exact value of $\left|\overrightarrow{OB}\right|$ in simplified surd form.

a) $\overrightarrow{OB} = 8\boldsymbol{i} + 2\boldsymbol{j} = \begin{pmatrix} 8 \\ 2 \end{pmatrix}$

b) $2\sqrt{17}$