

3  $O$ ,  $A$  and  $B$  are fixed points such that

$$\vec{OA} = (p\mathbf{i} - 4\mathbf{j})$$

$$\vec{OB} = \mathbf{i} + (2p + 1)\mathbf{j}$$

Given that  $\sqrt{2}|\vec{OA}| = |\vec{OB}|$  and  $p > 0$

(a) find the value of  $p$

(4)

Using this value of  $p$

(b) find a unit vector that is parallel to  $\vec{AB}$

(5)

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DO NOT WRITE IN THIS AREA



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DO NOT WRITE IN THIS AREA

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**Question 3 continued**

Handwriting practice area with horizontal dotted lines.

**(Total for Question 3 is 9 marks)**

