

4 O, A and B are fixed points such that

$$\overrightarrow{OA} = p\mathbf{i} + 2p\mathbf{j} \quad \overrightarrow{OB} = 5\mathbf{i} + 9p\mathbf{j}$$

Given that \overrightarrow{AB} is parallel to $(\mathbf{i} - 2\mathbf{j})$

- (a) find the value of p (6)
- (b) Hence find \overrightarrow{AB} as a simplified expression in terms of \mathbf{i} and \mathbf{j} (2)
- (c) Find a unit vector parallel to \overrightarrow{OA}

Give your answer in the form $\frac{\sqrt{a}}{5}(b\mathbf{i} + c\mathbf{j})$ where a, b and c are integers to be found. (4)

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Question 4 continued

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(Total for Question 4 is 12 marks)

