

- 9** The position vectors of A , B and C relative to an origin O are given by

$$\overrightarrow{OA} = \begin{pmatrix} 2 \\ 3 \\ -4 \end{pmatrix}, \quad \overrightarrow{OB} = \begin{pmatrix} 1 \\ 5 \\ p \end{pmatrix} \quad \text{and} \quad \overrightarrow{OC} = \begin{pmatrix} 5 \\ 0 \\ 2 \end{pmatrix},$$

where p is a constant.

- (i) Find the value of p for which the lengths of AB and CB are equal. [4]
- (ii) For the case where $p = 1$, use a scalar product to find angle ABC . [4]