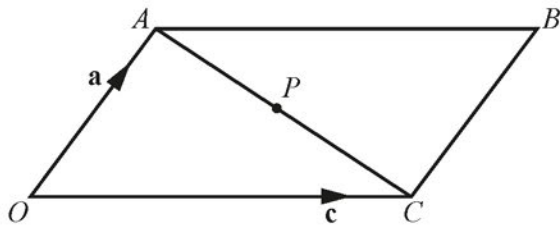**7** *OABC* is a parallelogram with $\overrightarrow{OA} = \mathbf{a}$ and $\overrightarrow{OC} = \mathbf{c}$. *P* is the midpoint of *AC*.

(i) Find the following in terms of $\mathbf{a}$ and $\mathbf{c}$, simplifying your answers.

   (a) $\overrightarrow{AC}$ [1]

   (b) $\overrightarrow{OP}$ [2]

(ii) Hence prove that the diagonals of a parallelogram bisect one another. [4]