2 Points A and B have position vectors $\begin{pmatrix} -3 \\ 4 \end{pmatrix}$ and $\begin{pmatrix} 1 \\ 2 \end{pmatrix}$ respectively.

Point C has position vector $\begin{pmatrix} p \\ 1 \end{pmatrix}$ and ABC is a straight line.

(a) Find p. [2]

Point D has position vector $\begin{pmatrix} q \\ 1 \end{pmatrix}$ and angle $ABD = 90°$.

(b) Determine the value of q. [3]