6 The points $A(5, -4)$ and $C(11, 6)$ are such that AC is the diagonal of a square, $ABCD$.

(a) Find the length of the line AC. [2]

(b) **(i)** The coordinates of the centre, E, of the square are $(8, y)$. Find the value of y. [1]

(ii) Find the equation of the diagonal BD. [3]

(iii) Given that the x-coordinate of B is less than the x-coordinate of D, write $\overrightarrow{EB}$ and $\overrightarrow{ED}$ as column vectors. [2]

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