3. Given that the point $A$ has position vector $4\mathbf{i} - 5\mathbf{j}$ and the point $B$ has position vector $-5\mathbf{i} - 2\mathbf{j}$,

   (a) find the vector $\overrightarrow{AB}$,
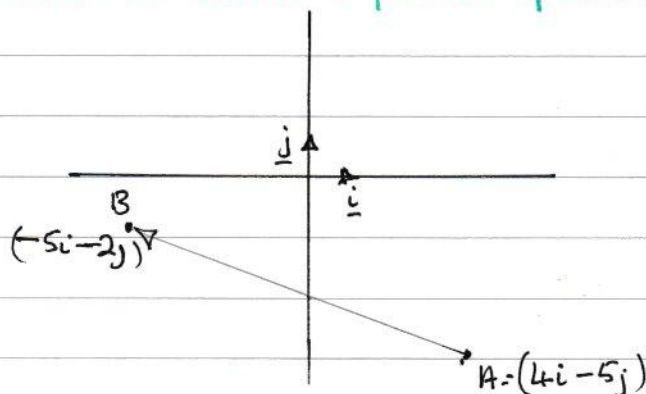
   (2)

   (b) find $|\overrightarrow{AB}|$.

   Give your answer as a simplified surd.

   (2)

Presumably $\underline{i}$ & $\underline{j}$ are the standard unit vectors
Always best to draw a picture if unsure.



$\overrightarrow{AB} = -9\underline{i} + 3\underline{j} = (-5i - 2j) - (4i - 5j)$

ie $AB$ is nine units in the $-\underline{i}$ direction and 3 in the $+\underline{j}$ direction

$|\overrightarrow{AB}| = \sqrt{((-9)^2 + 3^2)}$

$\phantom{|\overrightarrow{AB}|} = \sqrt{90}$

$\phantom{|\overrightarrow{AB}|} = 3\sqrt{10}$