7	**(a)**		$\overrightarrow{AB} = \overrightarrow{OB} - \overrightarrow{OA} = (4\mathbf{i} - 3\mathbf{j}) - (2\mathbf{i} + 4\mathbf{j}) (= 2\mathbf{i} - 7\mathbf{j})$	**M1**	**2.1**	Correct method to find either $\overrightarrow{AB}$ or $\overrightarrow{BA}$	
			$\sqrt{53}$ or 53 from $\pm(2\mathbf{i} - 7\mathbf{j})$	**A1**	**1.1**	cao	
			$\lvert\overrightarrow{OA}\rvert = \sqrt{20}, \quad \lvert\overrightarrow{OB}\rvert = 5$	**B1**	**1.1**	Correct lengths for *OA* and *OB* (or their squares)	
			$\cos AOB = \dfrac{(\sqrt{20})^2 + 5^2 - (\sqrt{53})^2}{2(\sqrt{20})(5)}$	**M1**	**3.1a**	Correct use of cosine rule for their *OA*, *OB* and *AB*	$\cos AOB$ may not be the subject, but substitutions must be correct for their values
			$\cos AOB = \left(\dfrac{20 + 25 - 53}{10\sqrt{20}} = \right) - \dfrac{4}{5(2\sqrt{5})} = -\dfrac{2\sqrt{5}}{25}$	**A1**	**2.2a**	**AG** – sufficient working must be shown	Condone this result from calculator without intermediate working.

Question			Answer	Marks	AO	Guidance	
				[5]			
7	**(b)**		$\sin^2 AOB = 1 - \left(-\frac{2\sqrt{5}}{25}\right)^2$ $\sin^2 AOB = \frac{121}{125} \Rightarrow \sin AOB = \frac{11\sqrt{5}}{25}$	**M1** **A1** **[2]**	**3.1a** **1.1**	Using the identity $\cos^2 X + \sin^2 X = 1$ with $\cos X = -\frac{2\sqrt{5}}{25}$ Or exact equivalent – justification not required for taking the positive square root	
7	**(c)**		Area of $OACB = 2\left(\frac{1}{2}\left(\sqrt{20}\right)(5)\left(\frac{11\sqrt{5}}{25}\right)\right)$ 22	**M1** **A1** **[2]**	**3.1a** **1.1**	Use of $A = ab\sin C$ (or equivalent) with *OA* and *OB* and sin *AOB* cao	May not use exact values here Condone awrt 22.0