Question		Answer	Marks	AO	Guidance	
10	(a)	$\mathbf{R} = (-4+a)\mathbf{i} + (2+b)\mathbf{j}$	B1	1.1	oe e.g. $\begin{pmatrix}-4\\2\end{pmatrix}+\begin{pmatrix}a\\b\end{pmatrix}$	
		$(-4+a)\mathbf{i} + (2+b)\mathbf{j} = k(-\mathbf{i}+3\mathbf{j})$	M1	3.1b	Sets their **R** equal to k times $-\mathbf{i}+3\mathbf{j}$ (or k times **R**) where k is non-numerical/unknown	Implied by a correct equation in a and b e.g. $\frac{a-4}{2+b} = -\frac{1}{3}$ **but not from stating** $-4+a=-1$ **and** $2+b=3$ (so must have come from a 'gradient' approach if k not seen)
		$k = 4-a$ therefore $2+b=3(4-a)$ so $3a+b=10$	A1	2.2a	**AG** Eliminate k and derive given result	Using an assumed value of k is **A0**
			[3]			
10	(b)	$a=6 \Rightarrow b=-8 \ \therefore \mathbf{R} = 2\mathbf{i}-6\mathbf{j}$	B1	1.1		
		$\lvert\mathbf{R}\rvert = \sqrt{2^2+(-6)^2}$	M1*	3.3	Calculate $\lvert\mathbf{R}\rvert$ or $\lvert\mathbf{R}\rvert^2$ for their **R**	
		$\sqrt{2^2+(-6)^2} = m(5\sqrt{10})$	M1dep*	3.4	N2L applied to the magnitude of their **R** with $5\sqrt{10}$	
		$m = \frac{\sqrt{40}}{5\sqrt{10}} = 0.4$	A1	2.2a	**www** 0.4 (oe) but square roots cancelled	
			[4]			