Question Number	Scheme	Marks
	Allow column vectors throughout	
4(a)	$\mathbf{r} = -\mathbf{i} - 3\mathbf{j}$	B1
	$\tan\theta = \pm\frac{1}{3}$ or $\pm\frac{3}{1}$	M1
	162^{O} or 198^{O} nearest degree	A1
		(3)
4(b)	$\sqrt{(t-3)^2 + (1-2t)^2} = 2.5$	M1
	$4t^2 - 8t + 3 = 0 \quad (5t^2 - 10t + 3.75 = 0)$	DM1A1
	$t = \frac{1}{2}$ or $\frac{3}{2}$ isw	M (A)1 A1
		(5)
		(8)
	Notes for question 4	
4(a)	B1 cao	
	M1 for any trig ratio of a relevant angle from <u>their</u> **r** (trig ratio could be implied by a relevant angle) (cosine could come from use of the scalar product of their **r** with **j**)	
	A1 cao	
4(b)	M1 oe	
	DM1, dependent on first M1, for simplifying to a 3 term quadratic or to a form from use of completing the square.	
	A1 correct quadratic	
	M(A)1 for $t = 0.5$	
	A1 for $t = 1.5$	