

Question		Answer	Marks	AO	Guidance	
5	(a)	$R = 13$	B1	1.1	B0 for $\sqrt{169}$ or for ± 13	or for $\cos \alpha = \pm \frac{12}{R}$, $\sin \alpha = \pm \frac{5}{R}$ For reference: 0.3947911197...
		$\left. \begin{array}{l} R \cos \alpha = 12 \\ R \sin \alpha = 5 \end{array} \right\} \tan \alpha = \frac{5}{12}$	M1	1.1	M1 for $\tan \alpha = k$ where $k = \pm \frac{5}{12}, \pm \frac{12}{5}$	
		$\alpha = 0.3948$	A1	1.1	A0 if in degrees (must be stated to exactly 4 significant figures at some point)	
		[3]				
5	(b)	$13 \cos(t - 0.3948) = \pm 3 \Rightarrow t = 0.3948 + \arccos\left(\frac{\pm 3}{13}\right)$	M1	1.1	Sets $R \cos(t - \alpha)$ (with their R and α) equal to either 3 or -3 , and attempt to solve (with correct order of operations)	M1 only if in degrees 1.7327192... 2.1984556...
		1.73	A1	1.1	awrt 1.73	
		2.20	A1	1.1	awrt 2.20 (condone 2.2) – ignore other values that are greater than 2.20	
		[3]				