Question	Answer	Marks	Guidance
8(b)	$\frac{\mathrm{d}y}{\mathrm{d}x}=2x\left(2-\sqrt{3}\right)+1$	**M1**	For attempt at differentiation to obtain form of $\frac{\mathrm{d}y}{\mathrm{d}x}=kx+1$
	$0=2x\left(2-\sqrt{3}\right)+1$ $x=-\frac{1}{2\left(2-\sqrt{3}\right)}\times\frac{\left(2+\sqrt{3}\right)}{\left(2+\sqrt{3}\right)}$ leading to $x=-\frac{1}{2}\frac{\left(2+\sqrt{3}\right)}{1}$	**M1**	**Dep** on previous M for equating to zero, rationalisation and attempt to simplify
	$x=-1-\frac{\sqrt{3}}{2}$	**A1**	
9(a)(i)	$(3y+2)(2x+1)$	**B1**	
9(a)(ii)	$(3\cos\theta+2)(2\sin\theta+1)=0$ $\cos\theta=-\frac{2}{3}$, $\sin\theta=-\frac{1}{2}$	**M1**	For relating to part (i) and a correct attempt to obtain $\cos\theta=...$ or $\sin\theta=...$
	$\theta=131.8^{\circ}$, 228.2° $\theta=210^{\circ}$, 330°	**3**	**M1** for solving one of the equations to obtain one correct solution **A1** for any two correct solutions **A1** for a further two correct solutions with no extra solutions within the range
9(b)	$\cos\left(2\phi+\frac{\pi}{4}\right)=\frac{\sqrt{3}}{2}$ oe	**B1**	
	$\phi=-\frac{5\pi}{24},-\frac{\pi}{24},\frac{19\pi}{24},\frac{23\pi}{24}$	**4**	**M1** for solving to obtain one correct positive solution **M1** for solving to obtain one correct negative solution **A1** for any two correct solutions **A1** for a further two correct solutions with no extra solutions within the range
10(a)	$\sin\frac{AOB}{2}=\frac{7.5}{10}$	**M1**	For a valid method
	$AOB=1.696$ = 1.70 to 2 dp	**A1**	Must see greater accuracy to justify given answer

Question	Answer	Marks	Guidance
10(b)	$AC^2 = 10^2 + 25^2 - \left(2\times10\times25\cos\left(\frac{AOB}{2}\right)\right)$	**M1**	For a complete and valid method to find AC
	AC = awrt 19.9	**A1**	
	Major arc AB = awrt 45.9 or awrt 45.8	**B1**	
	Perimeter = awrt 85.5 or awrt 85.6	**A1**	
10(c)	Area of major sector AOB = $\frac{1}{2}\times10^2\left(2\pi - AOB\right)$	**M1**	
	awrt 229	**A1**	
	Area of kite $OACB$ = $\frac{1}{2}\times15\times25$	**B1**	Allow working with 2 separate triangles
	Area of *their* major sector plus area of *their* kite	**M1**	
	Total area = awrt 417	**A1**	

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