Question	Answer	Marks	Partial Marks
1	$x = \frac{13}{14}$ oe	**B1**	
	$7x - 3 = -3.5$ oe, soi or $28x - 12 = -14$ oe, soi	**M1**	
	$x = -\frac{1}{14}$ oe	**A1**	
	Alternative method $196x^2 - 168x - 13 = 0$ oe	**(B1)**	
	factorising e.g. $(14x - 13)(14x + 1)$	**(M1)**	
	$x = \frac{13}{14}, -\frac{1}{14}$	**(A1)**	
2	$(\sqrt{2}+1)^2 = 3 + 2\sqrt{2}$ $\left[\text{leading to} \frac{1-\sqrt{2}}{3+2\sqrt{2}}\right]$	**M1**	
	$\frac{1-\sqrt{2}}{3+2\sqrt{2}} \times \frac{3-2\sqrt{2}}{3-2\sqrt{2}}$	**M1**	**FT** *their* $3 + 2\sqrt{2}$ if of equivalent difficulty
	Correctly expands $\frac{3 - 2\sqrt{2} - 3\sqrt{2} + 4}{9 - 8}$	**DM1**	**FT** *their* $3 + 2\sqrt{2}$ if of equivalent difficulty
	$7 - 5\sqrt{2}$	**A1**	
	Alternative method $\frac{1-\sqrt{2}}{(1+\sqrt{2})(1+\sqrt{2})} \times \frac{(1-\sqrt{2})(1-\sqrt{2})}{(1-\sqrt{2})(1-\sqrt{2})}$	**(M1)**	
	$\frac{(3-2\sqrt{2})(1-\sqrt{2})}{(1-2)^2}$	**(M1)**	
	Correctly expands $\frac{3 - 3\sqrt{2} - 2\sqrt{2} + 4}{[(-1)^2]}$	**(DM1)**	**FT** *their* $3 - 2\sqrt{2}$ if of equivalent difficulty
	$7 - 5\sqrt{2}$	**(A1)**	

Question	Answer	Marks	Partial Marks
3	$C(10, -4)$	**B1**	
	$[m_{AC} =]\frac{6-1}{2-6}$ oe or $\frac{-5}{4}$ oe	**M1**	
	$m_{\perp} = \frac{4}{5}$	**M1**	**FT** $\frac{-1}{their\frac{-5}{4}}$
	$y - (-4) = \frac{4}{5}(x - 10)$ oe	**A1**	**FT** *their* coordinates of *C* providing that one coordinate is correct and *their* perpendicular gradient
	$4x - 5y = 60$ oe	**A1**	
4(a)	CVs $\frac{1}{5}$, 6	**M1**	
	$x < \frac{1}{5}$, $x > 6$	**A1**	mark final answer
4(b)	$(-4k)^2 - 4(2k + 1)(2k - 1)$	**M1**	
	$16k^2 - 4(4k^2 - 1)$ or $16k^2 - 16k^2 - 8k + 8k + 4$ or better	**A1**	
	$4 > 0$	**A1**	
5(a)	8π	**B1**	
5(b)	$c = 3$	**B1**	
	$\left[\frac{\pi}{b} = 8\pi\right]\ b = \frac{1}{8}$	**B1**	
	$7 = a\tan\left(\frac{\pi}{4}\right) + 3$ oe	**M1**	
	$a = 4$	**A1**	

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