Question	Answer	Marks	Guidance
5(c)	$\sec^2 ABC = \tan^2 ABC + 1$ $= \left(\sqrt{3}-1\right)^2 + 1$ oe	**M1**	Allow use of correct identity with *their* (b)
	$= 5 - 2\sqrt{3}$	**A1**	
	Alternative		
	$\sec^2 ABC = \left(\dfrac{\sqrt{\left(5-\sqrt{3}\right)^2 + \left(1+2\sqrt{3}\right)^2}}{1+2\sqrt{3}}\right)^2$ leads to $\dfrac{41-6\sqrt{3}}{13+4\sqrt{3}}$ leads to $\dfrac{533+72-242\sqrt{3}}{121}$	**(M1**	For a complete method using triangle *ABD*, with sufficient detail in the expansions and rationalisation
	$= 5 - 2\sqrt{3}$	**A1)**	
6(a)	Midpoint = $(2, 7)$	**B1**	
	Gradient of $AB = \dfrac{6}{8}$ oe	**B1**	
	Perp bisector: $y - 7 = -\dfrac{4}{3}(x-2)$	**M1**	Must be using a perp gradient and a mid-point
	$4x + 3y - 29 = 0$	**A1**	Allow in any order but must be equated to zero.
6(b)	3	**B1**	FT on *their* **(a)**
6(c)	Displacement vector $\overrightarrow{CM} = \begin{pmatrix} -3 \\ 4 \end{pmatrix}$	**M1**	Allow equivalent vectors or other methods. May be implied by one correct coordinate.
	$(-1, 11)$	**A1**	Allow $x = -1,\ y = 11$

Question	Answer	Marks	Guidance
7(a)	$p\left(-\frac{1}{2}\right): -\frac{a}{8}+\frac{3}{4}-\frac{b}{2}-12=0$ $p(3): 27a+27+3b-12=105$	**M1**	For attempt at an equation using either $p\left(-\frac{1}{2}\right)$ or $p(3)$
	$a+4b=-90$	**A1**	Allow equivalent with constants collected
	$9a+b=30$	**A1**	Allow equivalent with constants collected
	$a=6, b=-24$	**2**	**M1** for attempt to solve *their* equations, dep on first M mark **A1** for both
7(b)	$(2x+1)(3x^2-12)$	**2**	**B1** for $3x^2$ **B1** for -12 and no extra term in x
7(c)	$x=-\frac{1}{2}$	**B1**	
	$x=\pm 2$	**B1**	Dep on both B marks in part (b)
8(a)	$\begin{pmatrix}-20\\48\end{pmatrix}$	**B1**	
8(b)	$\begin{pmatrix}-20\\48\end{pmatrix}t$	**B1**	Follow through on *their* (a)
8(c)	$\begin{pmatrix}12\\8\end{pmatrix}+\begin{pmatrix}-25\\45\end{pmatrix}t$ oe	**B1**	
8(d)	$\begin{pmatrix}12\\8\end{pmatrix}+\begin{pmatrix}-5\\-3\end{pmatrix}t$ oe	**B1**	
8(e)	$\lvert\overrightarrow{PQ}\rvert^2=(12-5t)^2+(8-3t)^2$	**M1**	Attempt to find modulus of *their* (d) which must contain terms in t
	$\lvert\overrightarrow{PQ}\rvert=\sqrt{144-120t+25t^2+64-48t+9t^2}$ $PQ=\sqrt{34t^2-168t+208}$	**A1**	Must see correct expansion leading to given answer.