Question	Answer	Marks	Guidance
1(a)	$y = -\frac{1}{2}x + 25$ isw	**3**	**M1** for $m = \frac{29-23}{-8-4}$ oe or $-\frac{1}{2}$ and **M1 FT** for $\frac{y-23}{x-4} = their\left(-\frac{1}{2}\right)$ oe or $y = their\left(-\frac{1}{2}\right)\ x + c$ and $23 = -\frac{1}{2} \times 4 + c$ oe **OR** **M1** for solving $23 = 4m + c$ $29 = -8m + c$ for $m = -\frac{1}{2}$ or $c = 25$ and **M1 FT** for correctly using *their m* or *their c* to find *c* or *m*
	Solves *their* linear equation simultaneously with $y = 2x + 5$ to find x or y	**M1**	**FT** *their* $y = -\frac{1}{2}x + 25$ oe
	(8, 21)	**A1**	
1(b)	$\sqrt{8^2 + 21^2}$ oe	**M1**	**FT** *their* (8, 21)
	$\sqrt{505}$ isw or 22.5 or 22.47[22…] rot to 2 or more dp	**A1**	
2	$x^2 + 2kx = -2x - 6k - 1$	**M1**	
	$x^2 + (2k+2)x + 6k + 1[= 0]$	**A1**	
	Correctly uses $b^2 - 4ac$ [*0] for *their* equation $(2k + 2)^2 - 4(6k + 1)$ [*0]	**M1**	where * is any inequality sign or =; **FT** *their* 3-term quadratic in x and k
	$4k^2 - 16k$ [*0] nfww	**A1**	
	$k = 4$	**A1**	**dep** on all previous marks awarded

Question	Answer	Marks	Guidance
2	**Alternative method**		
	$2x + 2k$	**(M1)**	
	$k = -x - 1$ or $x = -k - 1$ oe	**(A1)**	
	$-2(-k - 1) - 6k - 1 = (-k - 1)^2 + 2k(-k - 1)$ oe or $-2x - 6(-1 - x) - 1 = x\,(x + 2(-1 - x))$ oe	**(M1)**	**FT** *their k* of the form $ax + b$ where a and b are non-zero constants or *their x* of the form $ck + d$ where c and d are non-zero constants
	$k^2 - 4k$ [= 0] or $x^2 + 6x + 5$ [= 0] and $x = -5$ [$x = -1$] nfww	**(A1)**	
	$k = 4$	**(A1)**	**dep** on all previous marks awarded
3	$\dfrac{16 + 9\sqrt{3}}{(2 + \sqrt{3})^2}$	**B1**	
	$\dfrac{(16 + 9\sqrt{3})(7 - 4\sqrt{3})}{(7 + 4\sqrt{3})(7 - 4\sqrt{3})}$ or $\dfrac{16 + 9\sqrt{3}}{7 + 4\sqrt{3}} \times \dfrac{7 - 4\sqrt{3}}{7 - 4\sqrt{3}}$	**M1**	**FT** $\dfrac{c(16 + 9\sqrt{3})}{a + b\sqrt{3}}$ where a, b and c are non-zero constants
	$112 - 64\sqrt{3} + 63\sqrt{3} - 108$ or $\dfrac{-112 + 64\sqrt{3} - 63\sqrt{3} + 108}{-1}$	**A1**	
	$4 - \sqrt{3}$ or $-\sqrt{3} + 4$ cao, nfww	**A1**	
	Alternative method		
	$\dfrac{16 + 9\sqrt{3}}{(2 + \sqrt{3})^2}$	**(B1)**	
	$\dfrac{(16 + 9\sqrt{3})(2 - \sqrt{3})^2}{(2 + \sqrt{3})^2(2 - \sqrt{3})^2}$ or $\dfrac{16 + 9\sqrt{3}}{(2 + \sqrt{3})^2} \times \dfrac{(2 - \sqrt{3})^2}{(2 - \sqrt{3})^2}$	**(M1)**	
	$112 - 64\sqrt{3} + 63\sqrt{3} - 108$ or $64 - 32\sqrt{3} - 32\sqrt{3} + 48 + 36\sqrt{3} - 54 - 54 + 27\sqrt{3}$	**(A1)**	
	$4 - \sqrt{3}$ or $-\sqrt{3} + 4$ cao, nfww	**(A1)**	