Question	Answer	Marks	Partial Marks
9(a)	$\frac{1}{2} \times 24^2 \times \theta = 432$	**M1**	
	$\theta = \frac{3}{2}$ rads soi	**A1**	
	$24 \times$ *their* θ	**M1**	
	36 cao	**A1**	
	Alternative method		
	$s = r\theta$ soi and $\frac{1}{2} \times r \times s = 432$	**(B1)**	
	$\frac{1}{2} \times 24 \times s = 432$	**(M1)**	
	$s = \frac{432 \times 2}{24}$ oe	**(M1)**	
	[s =] 36	**(A1)**	
9(b)(i)	[OB =] $2y\cos\alpha$ oe	**B1**	
9(b)(ii)	$\frac{(their\ 2y\cos\alpha) \times y\sin\alpha}{2}$ $-\frac{1}{2} \times (their\ y\cos\alpha)^2 \times \alpha$ oe	**M2**	**M1** for either area
	correct completion to $\frac{y^2}{2}\cos\alpha(2\sin\alpha - \alpha\cos\alpha)$	**A1**	

Question	Answer	Marks	Partial Marks
10	[Term independent of x:] $^9C_3 \times a^6 \times b^3$ or $84 \times a^6 \times b^3$	**B1**	
	$a^6b^3 = \dfrac{-145152}{84}$	**M1**	**dep** on **B1**
	$\left(a^2b\right)^3 = -1728$ leading to $a^2b = -12$ or $a^2b = \sqrt[3]{-1728} = -12$	**A1**	
	$^9C_1 \times a^8 \times b$ or $9 \times a^8 \times b$	**B1**	
	Correctly solves correct equations simultaneously $9 \times a^8 \times b = -6912$ and $a^2b = -12$ as far as $a^6 = \ldots$ or $b^3 = \ldots..$	**M1**	Must be solving correct equations
	$a = 2$, $b = -3$ and no other values nfww	**B2**	**B1** for each nfww **dep** on previous B1B1
11	Eliminates one variable $(k-3y)^2 + y^2 + 2y - 9 = 0$	**M1**	
	$10y^2 + (2-6k)y + (k^2-9) = 0$ soi	**A1**	
	Uses $b^2 - 4ac * 0$ with *their* 3-term quadratic: $(2-6k)^2 - 4(10)(k^2-9)$ $[*0]$	**M1**	* can be = or any inequality sign
	$-4k^2 - 24k + 364$ $[*0]$	**A1**	
	Factorises $-4k^2 - 24k + 364$ or solves *their* $-4k^2 - 24k + 364 = 0$	**M1**	
	$k = 7$ only	**A1**	
	Uses *their k* in $10y^2 + (2-6k)y + (k^2-9) = 0$ oe	**M1**	
	$y = 2$ only	**A1**	
	$x = 1$ only	**A1**	