Question	Answer	Marks	Partial Marks
9	[When $x = 2$] $y = 3$	**B1**	
	$\frac{dy}{dx} = \frac{1}{2}(4x+1)^{-\frac{1}{2}} \times 4$	**M1**	for $\left[\frac{dy}{dx} =\right] \frac{1}{2}(4x+1)^{-\frac{1}{2}} \times k$, $k \neq 0$
	[gradient of tangent =] $\frac{1}{2}(4(2)+1)^{-\frac{1}{2}} \times 4$ soi	**M1**	**FT** *their* $\frac{dy}{dx}$ must be in the form $k(4x+1)^{-\frac{1}{2}}$, $k \neq 0$
	$y - \textit{their}\ 3 = \textit{their}\frac{2}{3}(x-2)$	**M1**	**Dep** on first **M1**
	[x-intercept for tangent =] $-\frac{5}{2}$ soi	**A1**	Must be from correct straight line equation
	$\frac{1}{2} \times \left(\frac{5}{2}+2\right) \times 3$ soi	**B1**	For area of triangle – allow unsimplified
	[x-intercept for curve =] $-\frac{1}{4}$ soi	**B1**	
	Area below curve: $\left[\frac{(4x+1)^{\frac{3}{2}}}{\frac{3}{2} \times 4}\right]_{-0.25}^{2}$ oe	**M1**	**M1** for integration in the form of $k(4x+1)^{\frac{3}{2}}$, $k \neq 0$ or 4
	correct use of upper and lower limits: $\left(\frac{(4(2)+1)^{\frac{3}{2}}}{6} - \frac{(4(-0.25)+1)^{\frac{3}{2}}}{6}\right)$ oe	**M1**	**Dep** on previous M1 for area under the curve Allow if using wrong limits but must see correct substitution
	Shaded area = $\frac{27}{4} - \frac{9}{2} = \frac{9}{4}$ oe	**A1**	

© Cambridge University Press & Assessment 2025

Question	Answer	Marks	Partial Marks
10(a)	$\frac{\sin\theta}{\sqrt{\cot^2\theta}}+\frac{1}{\sqrt{\sec^2\theta}}$	**B1**	for correct use of the trigonometry identity $\text{cosec}^2\theta-1=\cot^2\theta$
	$\sin\theta\tan\theta+\cos\theta$ oe	**B1**	
	$\sin\theta\times\frac{\sin\theta}{\cos\theta}+\cos\theta$	**B1**	
	$\frac{\sin^2\theta+\cos^2\theta}{\cos\theta}=\frac{1}{\cos\theta}=\sec\theta$	**B1**	**Dep** on all 3 previous marks Last mark is not available if persistent missing of θ
	Alternative		
	$\frac{\sin\theta}{\sqrt{\cot^2\theta}}+\frac{1}{\sqrt{\sec^2\theta}}$	**(B1)**	for correct use of the trigonometry identity $\text{cosec}^2\theta-1=\cot^2\theta$
	$\frac{\sec\theta\sin\theta+\cot\theta}{\cot\theta\sec\theta}$	**(B1)**	
	$\frac{\frac{\sin\theta}{\cos\theta}+\frac{\cos\theta}{\sin\theta}}{\frac{\cos\theta}{\sin\theta}\times\frac{1}{\cos\theta}}$	**(B1)**	
	$\frac{\frac{\sin^2\theta+\cos^2\theta}{\cos\theta\sin\theta}}{\frac{1}{\sin\theta}}$ leading to $\frac{1}{\cos\theta}$	**(B1)**	**Dep** on all 3 previous marks Last mark is not available if persistent missing θ