Question	Answer	Marks	Guidance
9	**Alternative**		
	Either $\frac{8}{2x+1}=6x+1$ $12x^2+8x-7=0$	**(M1)**	Attempt to obtain a 3-term quadratic in one variable equated to zero.
	$x=\frac{1}{2}$	**(2)**	**M1 dep** for solution, see guidance
	$y = 2$	**(A1)**	Award only if attempt at integration with respect to y is subsequently seen
	Or $x=\frac{2}{y}-\frac{1}{2}$ and $x=\frac{2y-1}{6}$ oe	**(M1)**	For rearranging both equations to obtain x or 2x in terms of y
	$2y^2 + 2y – 12 = 0$	**(M1)**	**Dep** for attempt to obtain a 3-term quadratic in one variable equated to zero.
	$y = 2$	**(2)**	**M1 dep** for solution, see guidance
	Then area enclosed between curve, y-axis and the line $y = 2 = \left[k\ln y-\frac{1}{2}y\right]_{their\ 2}^{4}$ $=k\ln 4-2-k\ln 2+1$	**(M1)**	For correct application of limits using *their y = 2*, k and 4 Allow unsimplified
	2ln2 – 1	**(A1)**	Not from incorrect work
	Area enclosed by straight line, the y axis and the line $y = 2$ **,** $=\frac{3}{8}$	**(B1)**	
	Shaded area = ln4 – $\frac{5}{8}$	**(A1)**	Not from incorrect work
10(a)	$\frac{30}{2}(4\tan 2x+(29\times 3\tan 2x))=455\sqrt{3}$	**M1**	For attempt to use sum formula with correct a and d
	$\tan 2x=\frac{\sqrt{3}}{3},\frac{455\sqrt{3}}{1365}$	**A1**	
	x = –165°, – 75°, 15°, 105°	**3**	**M1** for 1 correct solution (allow if in radians or from use of tan 2x = 0.577 or tan 2x = 0.58 e.g. 14.99°, 15.06°.) **A1** for a second correct solution **A1** for 2 further correct solutions and no extras in the range

© Cambridge University Press & Assessment 2024

Question	Answer	Marks	Guidance
10(b)	$r = 4\cos^2\left(\theta - \frac{\pi}{2}\right)$	**B1**	
	$4\cos^2\left(\theta - \frac{\pi}{2}\right) < 1$ or $-1 < 4\cos^2\left(\theta - \frac{\pi}{2}\right) < 1$ or $0 \leqslant 4\cos^2\left(\theta - \frac{\pi}{2}\right) < 1$	**M1**	For use of sum to infinity condition
	$\theta = -\frac{\pi}{6}, \frac{\pi}{6}, \frac{5\pi}{6}, \frac{7\pi}{6}$	**2**	**M1 dep** for one correct critical value **A1** for all critical values and no extras in the range $-\frac{\pi}{6} \leqslant \theta \leqslant \frac{7\pi}{6}$
	$-\frac{\pi}{6} < \theta < \frac{\pi}{6}$ (excluding 0) $\frac{5\pi}{6} < \theta < \theta\frac{7\pi}{6}$ (excluding π)	**2**	**A1** for each correct set of values

© Cambridge University Press & Assessment 2024