Question	Answer	Marks	Partial marks
10(a)	$OA = \sqrt{6^2 + 8^2}$ oe or 10	**B1**	
	[Angle AOB =] 0.9272[95…] rot to 4 or more dp or [Angle OAB =] 0.6435[01…] rot to 4 or more dp	**M1**	
	[Angle COB =] 2.214[297…] rot to 3 or more dp	**A1**	
	[Arc CB =] 6(*their* 2.214)	**M1**	**FT** *their COB*
	[Perimeter =] 8 + (*their* 10 + 6) + 6(*their* 2.214)	**M1**	**FT** *their* arc CB and OA
	37.3 or 37.28[578…] rot to 2 or more dp	**A1**	
10(b)	$\frac{1}{2} \times 8 \times 6 + \frac{1}{2} \times 6^2 \times 2.214$ oe, soi	**M2**	**FT** *their* 2.21 **M1** for $\frac{1}{2} \times 6^2 \times 2.214$ soi
	63.9 or 63.85[735…] rot to 2 or more dp	**A1**	
11(a)	$\dfrac{1}{\frac{1}{\cos x} - \frac{1}{\sin x}} + \dfrac{1}{\frac{1}{\cos x} + \frac{1}{\sin x}}$	**M1**	
	Simplifies denominator $\dfrac{1}{\frac{\sin x - \cos x}{\sin x \cos x}} + \dfrac{1}{\frac{\sin x + \cos x}{\sin x \cos x}}$	**A1**	
	Writes as two simple algebraic fractions: $\dfrac{\sin x \cos x}{\sin x - \cos x} + \dfrac{\sin x \cos x}{\sin x + \cos x}$	**A1**	OR writes as a single simple algebraic fraction: $\dfrac{\sin x \cos x(\sin x + \cos x) + \sin x \cos x(\sin x - \cos x)}{(\sin x - \cos x)(\sin x + \cos x)}$
	Combines and simplifies: $\dfrac{2\sin^2 x \cos x}{\sin^2 x - \cos^2 x}$	**A1**	
	Correct simplification to given answer e.g. $\dfrac{2\cancel{\sin^2 x}\cos x}{\cancel{\sin^2 x} - \frac{\cos^2 x}{\sin^2 x}} = \dfrac{2\cos x}{1 - \cot^2 x}$ or $\dfrac{\cancel{\sin^2 x}(2\cos x)}{\cancel{\sin^2 x}(1 - \cot^2 x)} \quad \left[= \dfrac{2\cos x}{1 - \cot^2 x}\right]$	**A1**	All steps correct nd fully justified

Question	Answer	Marks	Partial marks
11(a)	**Alternative method**		
	Common denominator: $\frac{\sec x + \operatorname{cosec} x + \sec x - \operatorname{cosec} x}{(\sec x - \operatorname{cosec} x)(\sec x + \operatorname{cosec} x)}$	**(M1)**	
	Simplifies: $\frac{2\sec x}{\sec^2 x - \operatorname{cosec}^2 x}$	**(A1)**	
	Rewrites in terms of sin$x$ and cos$x$: $\frac{\frac{2}{\cos x}}{\frac{1}{\cos^2 x} - \frac{1}{\sin^2 x}}$	**(A1)**	OR multiplies numerator and denominator by $\cos^2 x$: $\frac{2\sec x}{\sec^2 x - \operatorname{cosec}^2 x} \times \frac{\cos^2 x}{\cos^2 x}$
	$\frac{\frac{2}{\cos x}}{\frac{1}{\cos^2 x} - \frac{1}{\sin^2 x}} \times \frac{\cos^2 x}{\cos^2 x}$	**(A1)**	
	Correct simplification to given answer e.g. $\frac{\frac{2\cos^{\cancel{2}} x}{\cancel{\cos x}}}{\frac{\cos^2 x}{\cos^2 x} - \frac{\cos^2 x}{\sin^2 x}} = \frac{2\cos x}{1 - \cot^2 x}$	**(A1)**	
11(b)	$\tan\left(y + \frac{\pi}{4}\right) = [\pm]\frac{1}{\sqrt{3}}$	**B1**	
	$\left[y + \frac{\pi}{4} =\right] \frac{\pi}{6}$, or $-\frac{\pi}{6}$, or $-\frac{5\pi}{6}$, or $-\frac{7\pi}{6}$ oe	**M1**	
	$[y =] -\frac{\pi}{12}, \quad -\frac{5\pi}{12}, \quad -\frac{13\pi}{12}, \quad -\frac{17\pi}{12}$ oe	**A2**	No extras within range **A1** for two correct, ignoring extras