Question		Answer	Marks	AO	Guidance
13	(a)	$\sin\left(\theta+\frac{\pi}{3}\right)\left[=\frac{1}{\sqrt{2}}\right]$	**B1**	**3.1a**	or $\cos\left(\theta-\frac{\pi}{6}\right)\left[=\frac{1}{\sqrt{2}}\right]$
		$\left[\sin^{-1}\frac{1}{\sqrt{2}}=\right]\frac{\pi}{4}$ seen **or** $\frac{3\pi}{4}$ seen	**M1**	**1.1**	allow 45° **or** 135°; $\left[\cos^{-1}\frac{1}{\sqrt{2}}=\right]\frac{\pi}{4}$
		$\left[\frac{3\pi}{4}-\frac{\pi}{3}=\right]\frac{5\pi}{12}$ **cao**	**A1**	**3.2a**	dependent on sight of $\frac{3\pi}{4}$ **oe**; answer must be in radians; do **not** allow if additional answers are given in range; ignore additional values outside the range
		alternative method 1 $\frac{1}{2}\sin\theta+\frac{\sqrt{3}}{2}\cos\theta=\frac{1}{\sqrt{2}}$ rearranged and squared to give $4\sin^2\theta-2\sqrt{2}\sin\theta-1[=0]$ **or** $4\cos^2\theta-2\sqrt{6}\cos\theta+1[=0]$	**B1**	**3.1a**	
		$\sin\theta=\frac{\sqrt{2}+\sqrt{6}}{4}$ **or** $\cos\theta=\frac{\sqrt{6}-\sqrt{2}}{4}$	**M1**	**1.1**	$\sin\theta=\frac{\sqrt{2}\pm\sqrt{6}}{4}$ **or** $\cos\theta=\frac{\sqrt{6}\pm\sqrt{2}}{4}$
		$\theta=\frac{5\pi}{12}$ **cao**	**A1**	**3.2a**	answer must be in radians; do **not** allow if additional answers are given in range; ignore additional values outside the range
		alternative method 2 $\frac{1}{2}\sin\theta+\frac{\sqrt{3}}{2}\cos\theta=\frac{1}{\sqrt{2}}$ divide through by $\cos\theta$ or $\sin\theta$, and square $\tan^2\theta-2\sqrt{3}\tan\theta-1[=0]$ **or** $\cot^2\theta+2\sqrt{3}\cot\theta-1[=0]$	**B1**	**3.1a**	
		$\tan\theta=2+\sqrt{3}$ **or** $\cot\theta=2-\sqrt{3}$	**M1**	**1.1**	allow $\tan\theta=\pm2+\sqrt{3}$ **or** $\cot\theta=\pm2-\sqrt{3}$
		$\theta=\frac{5\pi}{12}$ **cao**	**A1**	**3.2a**	answer must be in radians; do **not** allow if additional answers are given in range; ignore additional values outside the range
			[3]		

Question		Answer	Marks	AO	Guidance
13	(b)	75°	B1FT [1]	1.1	**FT** 'their $\frac{5\pi}{12}$' $\times \frac{180}{\pi}$; no **FT** if there are multiple answers