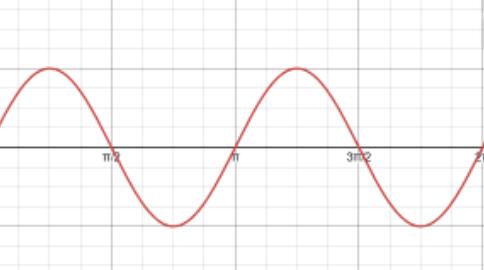


Question		Answer	Marks	AO	Guidance
4	(a)		[2]	M1 A1	1.1 sine wave with 2 complete cycles between 0 and 2π which must be clear from labelling; condone eg waves of unequal amplitude or different length; allow labelling to override poor sketching; allow labelling in degrees for M1 only 1.1 all correct with amplitude 1; ignore graph outside $[0, 2\pi]$
4	(b)	<p>either $-\frac{\pi}{12}$ or $-\frac{5\pi}{12}$ oe seen</p> <p>or</p> <p>either $\frac{7\pi}{6}$ or $\frac{11\pi}{6}$ oe seen</p> <p>$\frac{7\pi}{12}, \frac{11\pi}{12}, \frac{19\pi}{12}, \frac{23\pi}{12}$</p>	[3]	M1 A1 A1 A1	3.1a NB from use of $\sin^{-1}\left(-\frac{1}{2}\right)$ NB -0.262 or -1.309 ; decimals correct to 2 dp or better or 3.665 or 5.760 ; decimals correct to 2 dp or better M1 may be implied by two correct answers in radians two correct values NB awrt $1.833, 2.880, 4.974, 6.021$ or correct to 2 dp all four values correct with no extras for $0 \leq \theta \leq 2\pi$ if M0A0A0 allow SCB1 for two correct answers in degrees or SCB2 for all four correct in degrees $105, 165, 285$ and 345