Question			Answer	Marks	AO	Guidance
10	**(a)**		Use $\sin^2 x = \frac{1}{2}(1 - \cos 2x)$ So $1.5 + \sin^2 x = 1.5 + \frac{1}{2}(1 - \cos 2x)$ So $y = 2 - 0.5\cos 2x$	**M1** **A1**	**2.1** **2.1**	attempt to write $\sin^2 x$ in terms of $\cos 2x$ Allow for $a = 2,\ b = 0.5$ or fully correct expression
				[2]		
	(b)		[period] π	**B1**	**1.2**	Cao. Do not accept 180°
				[1]		
	(c)		intersect when $2 - 0.5\cos 2x = 1 + \cos 2x$ $\cos 2x = \frac{2}{3}$ $x = 0.421,\ 2.72,\ 3.56,\ 5.86$ radians (correct to 3sf)	**M1** **A1** **A1**	**3.1a** **1.1b** **1.1b**	Equate expressions in $\cos 2x$ and attempt to rearrange At least 1 correct value Three other correct values and no others in the interval $0 \leq x \leq 2\pi$ FT their first root
			Alternative method $1.5 + \sin^2 x = 2 - 2\sin^2 x$ Or $1.5 + (1 - \cos^2 x) = 1 + 2\cos^2 x - 1$ $3\sin^2 x = 0.5$ or $3\cos^2 x = 2.5$ $\sin x = \pm\sqrt{\frac{1}{6}}$ $[= \pm\frac{\sqrt{6}}{6}]$ or $\cos x = \pm\sqrt{\frac{5}{6}}$ $x = 0.421,\ 2.72,\ 3.56,\ 5.86$ radians (correct to 3sf)	**M1** **A1** **A1**	 At least 1 correct value Four correct values and no others in the interval $0 \leq x \leq 2\pi$ FT their first root
				[3]		