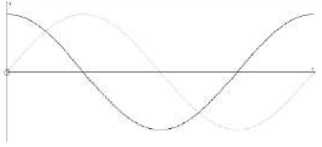
Question			Answer	Marks	AO	Guidance	
8	(a)	(i)	$(3\pi, -3)$	**B1** **B1** **[2]**	**3.1a** **1.1**	x-coordinate of 3π y-coordinate of -3	
8	(a)	(ii)	$a = 3$ $b = \frac{1}{2}$	**B1** **B1** **[2]**	**1.1** **2.2a**	Correct value for a Correct value for b	Could be embedded in the equation of the curve, but only credit this if not contradicted by $a = \ldots$ in the **AB** Could be embedded in the equation of the curve, but only credit this if not contradicted by $b = \ldots$ in the **AB**
8	(b)	(i)		**B1** **B1** **[2]**	**1.1** **1.1**	One complete cos curve attempted over the same domain (ignore any cos graph outside the domain of the sin graph) Ignore amplitude Intended maximum points on (or close to) the y-axis and at the end of the domain of x (but condone a non-zero gradient at these points) Same amplitude attempted (ignore period)	Allow **BOD** for small fluctuations in x_{max}/ x_{min}/ intersection with x-axis, as long as intention is clear – use overlay to judge intent (it can be moved and dragged onto the axes in the script) Allow a curve that goes beyond the given domain of x, as long as one full period of the cos graph is intended to coincide with the given sin graph For tolerance, use two dashes on the overlay as a guide Allow **BOD** for small fluctuations in amplitude, as long as intention is clear – use overlay to judge intent Must be from recognisable attempt at a positive cos curve For tolerance, use two dashes on the overlay as a guide

Question			Answer	Marks	AO	Guidance	
8	(b)	(ii)	$p\sin qx = p\cos qx$ $\tan qx = 1$	**B1**	**3.1a**	Obtain $\tan qx = 1$ oe If no equation seen then **B1** can be implied by $qx = \frac{1}{4}\pi$ or $\frac{5}{4}\pi$ (or $qx = 45°$ or $225°$)	**BOD** if $\frac{\cos qx}{\sin qx} = 1$ then appears as $\tan qx = 1$ on the next line, as no incorrect statement seen Equally condone other similar statements where no error is seen eg $\sin^2 qx - \cos^2 qx = 0$ becoming $\cos 2qx = 0$ If using harmonic form then condone no / incorrect R (as irrelevant to solution) Could use a longer method (eg initially squaring both sides) but this must result in a correct equation in a single trig function (with no powers) eg $\sin qx = \frac{1}{2}\sqrt{2}$
			$qx = \frac{1}{4}\pi$ $x = \frac{1}{4q}\pi$	**B1**	**1.1**	Obtain correct first solution	Allow in degrees ie $x = \frac{45}{q}$ Condone answers both in degrees and radians
			$qx = \frac{5}{4}\pi$	**M1**	**3.1a**	Attempt second value for qx (could be implied by value for x) If solving $\tan qx = k$, then need $k \neq 0$	Allow working in degrees, but only if consistent with first value for qx (ie add 180 if in degrees or add π if in radians) Or $\sin qx$ or $\cos qx = k$, with $-1 < k < 1$ and $k \neq 0$
			$x = \frac{5}{4q}\pi$	**A1** **[4]**	**1.1**	Obtain correct second solution **A0** if additional solutions in $[0, \frac{2}{q}\pi]$	Must now be in radians only, but accept any equivalent form eg $\frac{1.25\pi}{q}$ **A0** if answers both in degrees and radians Whilst the command word is 'determine' some solutions may just use points of intersection of $\sin x$ and $\cos x$ along with transformations; if no method is seen then allow **B2** per correct answer, but with no partial credit