22	a		2.5, −60	2	M1	for one correct value
					A1	oe e.g. −2.5 & 120
					SC	M1 for drawing cos curve
	bi		(2, 5)	1	B1	
	bii		(4, −2)	1	B1	
						Total 4 marks

23	$(v=)\ 3t^2 + 2\times 4t - 5$				M1	2 out of 3 terms differentiated correctly
	$3T^2 + 8T - 5 = V$ **OR** $3T^2 + 8T - 5 - V = 0$				A1	correct equation
	$3(T^2 + \frac{8}{3}T) - 5$ **OR** $3(T^2 + \frac{8}{3}T - \frac{5}{3})$	$(T=)\ \frac{-8 \pm \sqrt{8^2 - 4\times 3\times(-5-V)}}{2\times 3}$			M1	attempt to complete the square **OR** use quadratic formula (condone one sign error in a, b or c and ft their quadratic with mistake in a or b) (condone + instead of ±)
	$\left(T + \frac{4}{3}\right)^2 = \left(\frac{4}{3}\right)^2 + \frac{V+5}{3}$	$(T=)\ \frac{-8 \pm \sqrt{124+12V}}{6}$			M1	sight of this method mark implies the previous M1 (condone + instead of ±) (ft their quadratic with mistake in a or b)
	$T = \frac{-4}{3} \pm \frac{1}{3}\sqrt{16+3V+15}$	$(T=)\ \frac{-8 \pm 2\sqrt{31+3V}}{6}$			M1	(condone + instead of ±) (ft their quadratic with mistake in a or b)
			$\frac{-4+\sqrt{31+3V}}{3}$	6	A1	accept $k = 31$ and $m = 3$
						Total 6 marks

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