Q	Mark Scheme	Marks	Marking guidance
4 (a)	$\lambda^2+2\lambda-3=0\left(=(\lambda+3)(\lambda-1)\right)$	M1	Set **j** component = 0 and solve for λ
	$\Rightarrow \lambda=1$	A1	Only. Seen or implied. Accept $t=1$
	Use $\mathbf{a}=\dfrac{\mathrm{d}\mathbf{v}}{\mathrm{d}t}$	M1	Attempt derivative of both components with respect to *t*. Powers going down. Condone errors in dealing with the signs / indices for the square root. The answer must be a vector.
	$=\dfrac{-1}{2\sqrt{5-t}}\mathbf{i}+(2t+2)\mathbf{j}$	A1	Any equivalent form
	$=-\dfrac{1}{4}\mathbf{i}+4\mathbf{j}$	A1	Only. Any equivalent form. ISW if they go on to find the magnitude.
		5	
4 (b)	Use $\mathbf{s}=\int \mathbf{v}\,\mathrm{d}t$	M1	Attempt integral of both components. (M0 if they have assumed that one component is zero) Powers going up. Condone errors in dealing with the signs / indices for the square root.
	$\mathbf{s}=\left(-\dfrac{2}{3}(5-t)^{\frac{3}{2}}(+A)\right)\mathbf{i}+\left(\dfrac{1}{3}t^3+t^2-3t(+B)\right)\mathbf{j}$	A1 A1	Unsimplified expression with error in at most one term Correct unsimplified expression. Allow with no constant(s) of integration
	Use $t=1, \mathbf{s}=-2\mathbf{i}+\mathbf{j}$	DM1	Use of initial condition to find constant(s) of integration. Dependent on the previous M1.
	$\mathbf{s}=\left(-\dfrac{2}{3}(5-T)^{\frac{3}{2}}+\dfrac{10}{3}\right)\mathbf{i}+\left(\dfrac{1}{3}T^3+T^2-3T+\dfrac{8}{3}\right)\mathbf{j}$	A1	Any equivalent form for the position vector
		5	
		(10)	