Question Number	Scheme	Marks
2	Integrate to find *v*: $v = 8t - 3t^2 \left(+C\right)$	M1A1
	Use $t = 0, v = 3$: $v = 3 + 8t - 3t^2$	A1
	Integrate to find *s*: $s = 3t + 4t^2 - t^3$	M1A1ft
	At rest when $v = 0$	M1
	Solve a 3 term quadratic for *t*: $\left(0 = 3t^2 - 8t - 3 = \left(t - 3\right)\left(3t + 1\right)\right)$ $t = 3$	M1
2(i)	$s = 9 + 36 - 27 = 18$ (m)	A1 cao
2(ii)	Complete strategy for total distance e.g. $s(3)+s(3) - s(4)$	M1
	$= 18 + \left(18 - \left(12 + 64 - 64\right)\right) = 24$ (m)	A1 cao
		(10)
		Total 10

Notes	
M1	Integrate *a* . Must see at least one power increased.
A1	Correct integral. Constant not needed.
A1	Correct *v* with initial velocity used to find *C*.
M1	Integrate their *v* with at least one power increasing.
A1ft	Correct integration of **their** velocity. Constant not needed, but if included must become zero.
	If they state the correct integral with the correct limits and get 18, award M1A1
M1	Setting $v = 0$ to find times at which particle is at rest.
M1	Solving their **3 term** quadratic. Implied by correct solutions from a correct equation, but if their equation or solutions are incorrect then use of a correct formula or factorising with correct products must be seen for this mark.
A1cao	Correct distance when particle comes to rest.
	If they state the correct integral with the correct limits and get 18, award A1
M1	Attempt to find distance travelled between "3" and 4 seconds and add to their answer to (i). They should use their time to come to rest, as long $0 < t < 4$
A1 cao	24 m. Must have come from correct algebraic integration and limits.
	If they state the correct integrals with the correct limits and strategy and get 24, award M1A1