Question	Answer	Marks	Guidance
(a)	$0 = \dfrac{9}{4} + \dfrac{b}{(5+1)^2} - c \times 5^2$	B1	Use of $v(5) = 0$ to form equation in b and c
	$a = -2\dfrac{b}{(t+1)^3} - 2ct$	M1	For use of $a = \dfrac{dv}{dt}$ and $a(5) = -\dfrac{13}{12}$
	$-\dfrac{13}{12} = -2\dfrac{b}{(5+1)^3} - 2c \times 5$	A1	
	$\dfrac{b}{36} - 25c = -\dfrac{9}{4}$ and $-\dfrac{b}{108} - 10c = -\dfrac{13}{12}$ leading to $b = \ldots$ or $c = \ldots$	M1	Attempts to solve simultaneous equations
	$b = 9$ and $c = 0.1$	A1	$b = 9$ (AG)
		5	

Question	Answer	Marks	Guidance
(b)	$\int\left(\dfrac{9}{4}+\dfrac{9}{(t+1)^2}-0.1t^2\right)dt\ =\ \ldots$	**M1**	For use of $s=\int v\,dt$
	$=\dfrac{9}{4}t-\dfrac{9}{(t+1)}-\dfrac{1}{30}t^3\,[+K]$	**A1 FT**	FT *their* value of c from **(a)**
	$\left[\dfrac{9}{4}t-\dfrac{9}{(t+1)}-\dfrac{1}{30}t^3\right]_5^{10}=\left[\left(\dfrac{9}{4}\times10-\dfrac{9}{(10+1)}-\dfrac{1}{30}\times10^3\right)-\left(\dfrac{9}{4}\times5-\dfrac{9}{(5+1)}-\dfrac{1}{30}\times5^3\right)\right]$	**M1**	For evaluation from 0 to 5 **or** from 5 to 10
	$=$ $\left[\left(\dfrac{9}{4}\times5-\dfrac{9}{(5+1)}-\dfrac{1}{30}\times5^3\right)-(-9)\right]-\left[\left(\dfrac{9}{4}\times10-\dfrac{9}{(10+1)}-\dfrac{1}{30}\times10^3\right)-\left(\dfrac{9}{4}\times5-\dfrac{9}{(5+1)}-\dfrac{1}{30}\times5^3\right)\right]$ $=5.583+9+11.651+5.583$ or $\dfrac{175}{12}+\dfrac{2275}{132}$	**M1**	For evaluation from 0 to 5 **and** from 5 to 10 to find distance travelled
	$=31.8$ m	**A1**	or $\dfrac{350}{11}$
		5	