Question		Scheme	Marks	AOs
3(a)		Differentiate s wrt t	M1	3.1a
		$(v =)\ t^2 - 5t + 6$	A1	1.1b
		Equate their v to 0 and solve	M1	1.1b
		$t = 2$ or 3	A1	1.1b
		$(a =)\ 2t - 5$	B1**ft**	2.1
		$a = 1$ and -1 (m s^{-2}) isw (A0 if extras)	A1	1.1b
			(6)	
(b)		Attempt to find values of s for $t = 2, 3$ *and* 4 oe	**DM**1	1.1b
		Correct values are $\left(s_2 = \dfrac{14}{3}, s_3 = \dfrac{9}{2} \ and\ s_4 = \dfrac{16}{3} \right)$ Could be implied by correct values for: s_2 , $(s_3 - s_2)$ and $(s_4 - s_3)$ which are $\dfrac{14}{3}$, $(-\dfrac{1}{6})$ and $\dfrac{5}{6}$		
		Total distance travelled $\quad = s_2 + (s_2 - s_3) + s_4 - s_3$ **OR** $\ s_2 - (s_3 - s_2) + s_4 - s_3$ **OR** $\left[\dfrac{1}{3}t^3 - \dfrac{5}{2}t^2 + 6t\right]_0^2 - \left[\dfrac{1}{3}t^3 - \dfrac{5}{2}t^2 + 6t\right]_2^3 + \left[\dfrac{1}{3}t^3 - \dfrac{5}{2}t^2 + 6t\right]_3^4$ **OR** $\quad \dfrac{14}{3} \quad - \quad (-\dfrac{1}{6}) \quad + \quad \dfrac{5}{6}$ **OR** $\ s_2 + 2(s_2 - s_3) + s_4 - s_2$ $(= 2s_2 - 2s_3 + s_4)$ oe	M1	2.1
		$5\frac{2}{3}$ oe (m) Accept 5.7 or better	A1	1.1b
			(3)	
			(9 marks)	
Notes:				
3a	M1	Differentiate, with at least 2 powers decreasing by 1		
	A1	Correct expression		
	M1	Must have attempted to differentiate s to find v and be solving a 3 term quadratic		
	A1	Both values needed		
	B1**ft**	Follow their v (must be differentiating)		

	A1	cao
3b	**DM** 1	<u>This mark is dependent on the 2nd M1 in part (a) and their *t* values are between 0 and 4.</u> Clear attempt to find all three *s* values (may integrate their *v* incorrectly) **N.B.** No penalty for extra values.
	M1	Complete method using their *s* values Do NOT condone sign errors.
	A1	Any equivalent fraction, 5.7 or better.
		S.C. Correct answer, with no working, scores all 3 marks, since $\int\limits_0^4 \left| t^2 - 5t + 6 \right| \, \mathrm{d}t$ entered on a calculator will give $\dfrac{17}{3}$