

Question	Scheme	Marks	AOs
4(a)	$s = \int_0^1 16 - 3t^2 dt$	M1	1.1a
	$= [16t - t^3]_0^1$	A1	1.1b
	$= 15 \text{ (m)}$	A1	1.1b
		(3)	
(b)	$16 - 3t^2 = 0$	M1	3.1b
	$t = \sqrt{\frac{16}{3}} \text{ oe}$	A1	1.1b
		(2)	
(c)	$16t - t^3 = 0$	M1	3.1b
	$t(16 - t^2) = 0$	M1	1.1b
	$t = 4$	A1	1.1b
		(3)	
(8 marks)			
Notes:			
(a) M1: Attempt to integrate, one power going up A1: Correct integral and limits or indefinite integral with $C = 0$ and $t = 1$. A1: 15 (m)			
(b) M1: Identifying correct strategy to solve problem of finding direction change by equating v to 0 and solving for t A1: correct answer – any surd or decimal equivalent to at least 2 sf			
(c) M1: Identifying correct strategy to solve problem by using use $s = 0$ and equating their integral to 0 M1: Attempt to solve A1: $t = 4$			