

Question	Scheme	Marks	AOs
6	Integrate a w.r.t. time	M1	1.1a
	$\mathbf{v} = \frac{5t^2}{2}\mathbf{i} - 10t^{\frac{3}{2}}\mathbf{j} + \mathbf{C}$ (allow omission of C)	A1	1.1b
	$\mathbf{v} = \frac{5t^2}{2}\mathbf{i} - 10t^{\frac{3}{2}}\mathbf{j} + 20\mathbf{i}$	A1	1.1b
	When $t = 4$, $\mathbf{v} = 60\mathbf{i} - 80\mathbf{j}$	M1	1.1b
	Attempt to find magnitude: $\sqrt{(60^2 + 80^2)}$	M1	3.1a
	Speed = 100 m s^{-1}	A1ft	1.1b

(6 marks)

Notes:

1st M1: for integrating **a** w.r.t. time (powers of t increasing by 1)

1st A1: for a correct **v** expression without **C**

2nd A1: for a correct **v** expression including **C**

2nd M1: for putting $t = 4$ into their **v** expression

3rd M1: for finding magnitude of their **v**

3rd A1: ft for 100 m s^{-1} , follow through on an incorrect **v**