Question	Answer	Marks	Partial marks
11(a)(i)	12	**2**	**B1** for 3! × 2! or ${}^2P_2 \times {}^3P_3$ oe
11(a)(ii)	72	**2**	**B1** for 5! − 4! × 2! oe or 6 × 2! × 3! oe
11(b)	4200	**2**	**B1** for ${}^{10}C_3 \times {}^7C_3 \left[\times {}^4C_4\right]$ oe or ${}^{10}C_4 \times {}^6C_3 \left[\times {}^3C_3\right]$ oe
12(a)	Correct derivative: $-\sin t - \cos t$	**M1**	
	$-\frac{1+\sqrt{3}}{2}$ oe or −1.37 or –1.366[02…] rot to 3 or more dp	**A1**	Mark **final answer**
12(b)	[$v = 0 \Rightarrow$] $\cos t - \sin t = 0$ $t = \frac{\pi}{4}$	**B2**	**B1** for $\cos t - \sin t = 0$
	Correct integral: $\sin t + \cos t$ (+ c)	**M1**	
	$0 = \sin 0 + \cos 0 + c$	**M1**	**FT** *their* attempt to integrate
	$s = \sin t + \cos t - 1$	**A1**	
	$\sqrt{2} - 1$ oe, isw or 0.414[21…]	**A1**	**dep** on all previous marks awarded
	Alternative		
	[$v = 0 \Rightarrow$] $\cos t - \sin t = 0$ $\rightarrow t = \frac{\pi}{4}$	**(B2)**	**B1** for $\cos t - \sin t = 0$
	Correct integral: $\sin t + \cos t$	**(M1)**	
	with limits $t = \frac{\pi}{4}$ and $t = 0$	**(A1)**	Must be in radians
	Substitutes limits into correct integral	**(M1)**	**FT** *their* $t = \frac{\pi}{4}$ from attempt at solving $v = 0$
	$\sqrt{2} - 1$ oe, isw or 0.414[21…]	**(A1)**	**dep** on all previous marks awarded
12(c)	$-s - 1$ oe isw	**B1**	

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