Question	Answer	Marks	Guidance
6(c)	$\frac{1}{2}(2a)^2 \sin\frac{\pi}{3}$	**B1**	**FT** *their* $\frac{\pi}{3}$
	$\frac{1}{2}a^2\frac{\pi}{3}$	**B1**	**FT** *their* $\frac{\pi}{3}$
	$\sqrt{3}a^2 - \frac{\pi a^2}{6}$	**B1**	**FT** *their* $\frac{\pi}{3}$
7(a)(i)	${}^8C_4$	**M1**	For realisation that there are 4 places left and 8 people available to fill them
	70	**A1**	
7(a)(ii)	1 teacher on committee: 5 ways	**B1**	
	${}^{12}C_8 - 5$	**M1**	
	490	**A1**	
	Alternative 2 teachers: 70 3 teachers: 210 4 teachers: 175 5 teachers: 35	**(2)**	**B1** for 2 correct cases
	490	**(B1)**	
7(b)	$\frac{n!}{(n-5)!} = 6\frac{(n-1)!}{(n-1-4)!}$	**B1**	
	$\frac{n}{(n-5)!} = \frac{6}{(n-5)!}$	**M1**	For simplification of either $n!$ and $(n-1)!$ or 'cancelling out' of the terms of $(n-5)!$
	$n = 6$	**A1**	nfww
8(a)	$b = 2$	**B1**	
	At $(0, 3)$: $3 = a + c$	**B1**	
	At $\left(\frac{5\pi}{6}, 0\right)$: $0 = a\cos\frac{5\pi}{3} + c$ $0 = \frac{a}{2} + c$	**M1**	For use of *their b* and $\left(\frac{5\pi}{6}, 0\right)$
	$a = 6$ $c = -3$	**A1**	For both

Question	Answer	Marks	Guidance
8(b)	$\left(\frac{\pi}{6}, 0\right)$	**B1**	Allow for $x = \frac{\pi}{6}$
8(c)	$\left(\frac{\pi}{2}, -9\right)$	**2**	**B1** for $\frac{\pi}{2}$ **B1** for -9
9(a)	$y = x^3 - 2x^2 - 4x + 8$	**B1**	
	$\frac{dy}{dx} = 3x^2 - 4x - 4$ $(3x+2)(x-2) = 0$	**M1**	For attempt to differentiate, allow one slip and for equating *their* $\frac{dy}{dx}$ to zero and attempt to solve to obtain $x = k$
	$\left(-\frac{2}{3}, \frac{256}{27}\right)$	**A1**	
	$(2, 0)$	**A1**	
9(b)		**4**	**B1** for curve with maximum in the second quadrant **B1** for $y = 8$ either on the curve or stated **B1** for $x = \pm 2$ either on the curve or stated **B1** for a cusp at $x = -2$ and a min at $x = 2$
9(c)	$0 < k < \frac{256}{27}$	**2**	**FT** on *their* $\frac{256}{27}$ **B1** for either $0 < k$ or $k < \frac{256}{27}$
10(a)	$\overrightarrow{CD} = \frac{3}{4}\mathbf{a}$	**B1**	
	$\overrightarrow{OD} = \mathbf{c} + \frac{3}{4}\mathbf{a}$	**B1**	
	$\overrightarrow{OE} = h\left(\mathbf{c} + \frac{3}{4}\mathbf{a}\right)$	**B1**	
	$\overrightarrow{DE} = h\left(\mathbf{c} + \frac{3}{4}\mathbf{a}\right) - \left(\mathbf{c} + \frac{3}{4}\mathbf{a}\right)$ oe cao	**B1**	
10(b)	$\overrightarrow{DE} = \frac{1}{4}\mathbf{a} + k\mathbf{c}$	**B1**	