Question number	Scheme	Marks
4.	(a) $\sin 2A = \sin A\cos A + \cos A\sin A \quad (= 2\sin A\cos A)$	B1
	(b) $\cos 2A = \cos^2 A - \sin^2 A = (1-\sin^2 A) - \sin^2 A \quad (= 1-2\sin^2 A)$	M1A1
	(c) $\sin 3A + \sin A = \sin(2A+A) = \sin 2A\cos A + \cos 2A\sin A + \sin A$	M1
	$= 2\sin A\cos^2 A + (1-2\sin^2 A)\sin A + \sin A$	M1
	$= 2\sin A(1-\sin^2 A) + \sin A - 2\sin^3 A + \sin A$	M1
	$= 4\sin A - 4\sin^3 A$	A1 (7)
5.	(a) $a^2 = 5a \qquad a = 5$	M1A1
	(b) $y - 5 = -\frac{5}{7}(x-5)$	M1
	$y = 0 \quad (x-5) = 7 \quad x = 12$	M1A1
	(c) Vol. of cone $= \frac{1}{3}\pi \times 5^2 \times (12-5) = \frac{175}{3}\pi$	B1
	$\int_0^5 \pi y^2 \mathrm{d}x = \int_0^5 \pi \times 5x \,\mathrm{d}x = 5\pi\left[\frac{x^2}{2}\right]_0^5$	M1A1ft
	$= \frac{125}{2}\pi$	A1
	Total vol. $= \frac{125}{2}\pi + \frac{175}{3}\pi = \frac{725}{6}\pi$	B1ft (9)
6.	(a) $a + 2d = 70$	M1
	$\frac{10}{2}(2a+9d) = 450$	A1
	$2a + 9d = 90$	
	$5d = -50 \Rightarrow d = -10$	M1A1
	(b) $a = 70 + 20 = 90$	B1
	$S = \frac{n}{2}(180 - 10(n-1))$	M1
	$\frac{n}{2}(190-10n) \ldots 350 \qquad 190n - 10n^2 \ldots 700$	A1
	$n^2 - 19n + 70 \,„\, 0$	
	$(n-5)(n-14) \,„\, 0$	M1
	critical values: 5,14	
	$5 „ n „ 14 \quad n \in ¢ \quad (n = 5, 7, \ldots, 13, 14)$	A1
		A1ft (10)