

1	iA	$x^4 = 8x$ (2, 16) c.a.o. PQ = 16 and completion to show $\frac{1}{2} \times 2 \times 16 = 16$	M1 A1 A1	NB answer 16 given	3
	iB	$x^5/5$ evaluating their integral at their co-ord of P and zero [or 32/5 o.e.] 9.6 o.e.	M1 M1 A1		
	iiA	$6x^2h^2 + 4xh^3 + h^4$	2	B1 for two terms correct.	2
	iiB	$4x^3 + 6x^2h + 4xh^2 + h^3$	2	B1 for three terms correct	2
	iiC	$4x^3$	1		1
	iiD	gradient of [tangent to] curve	1		1

2	16.1		4	M3 for $\frac{1}{4}\{8.2 + 4.2 + 2(6.4 + 5.5 + 5 + 4.7 + 4.4)\}$ M2 for one slip/error M1 for two slips/errors	
	overestimate + expn eg sketch		1		5

3	iA	6.25	B2	M1 for $x = 5$ used to find y	2
	iB	(V =) area of cross-section \times length $(\frac{100}{4})[\frac{10}{2}x^2 - \frac{1}{3}x^3]$ o.e. [val at $x = 10$] – [val at $x = 0$] 4166 to 4167 or 4170	E1 M1 M1 A2	Subs of correct limits into their integrand A1 for 166.6... or 16666.6... or 41.6...rot to 3 sf or more	5
	ii	52.62 Their(5262) – their (4167)	B4 M1	M3 for- $\frac{2}{2} \times [2.15x^2 + 2(5.64x^2 + 6.44x^2)]$ oe Or M2 if one slip Or M1 if 2 slips or one trap evaluated Must be >0	5 [12]