Question			Answer	Marks	AO	Guidance	
1	(a)		$0.5\times0.5\left\{0+2\sqrt{2}+2\left(\frac{\sqrt{5}}{2}+\sqrt{3}+\frac{\sqrt{21}}{2}\right)\right\}$	**B1**	**1.1a**	State the 4 correct non-zero y-values and no others	Exact values (including unsimplified) or decimal equivs (0, 1.12, 1.73, 2.29, 2.83) – 3sf or better B0 if other ordinates seen unless clearly not intended to be used
				M1*	**1.1a**	Attempt to find area between $x = 1$ and $x = 3$, using $k\{y_0 + y_n + 2(y_1 + ... + y_{n-1})\}$	Big brackets need to be seen or implied y-values must be correctly placed Must be using attempts for at least 4 y-values (but no need to see $y = 0$ explicitly) Condone using other than 4 intervals as long as values equally spaced between $x = 1$ and $x = 3$
				M1d*	**1.1a**	Use $k = 0.5 \times 0.5$ soi	Dep on previous M1 Or using $k = 0.5h$, h consistent with their different number of intervals
			= 3.28	**A1**	**1.1**	Obtain 3.28, or better	Allow answers to > 3sf, as long as they round to 3.28
				[4]			
1	(b)		Under-estimate, as the tops of the trapezia are below the curve	**B1**	**3.2b**	Under-estimate, with any valid explanation	Condone just 'trapezia under curve' Or curve is concave / decreasing gradient (not decreasing function) Accept explanation on diagrams Allow comparing to true value (3.36) B0 if any additional incorrect or contradictory statements
				[1]			

Question			Answer	Marks	AO	Guidance	
1	(c)		Use more trapezia, of a lesser width, between the same limits	B1 [1]	3.2b	Convincing reason	Condone just 'more trapezia' or 'narrower trapezia' Could refer to strips or intervals