

Q	Marking instructions	AO	Marks	Typical solution
8(a)	Integrates with one term correct	1.1a	M1	$\int_1^a \left(6 - \frac{12}{\sqrt{x}}\right) dx = [6x - 24\sqrt{x}]_1^a$ $= 6a - 24\sqrt{a} - 6 + 24$ $= 6a - 24\sqrt{a} + 18$
	Obtains fully correct integral	1.1b	A1	
	Substitutes limits and obtains the given answer. AG	2.1	R1	
	Subtotal		3	

Q	Marking instructions	AO	Marks	Typical solution
8(b)	Explains or recognises that area is linked to integration	2.4	M1	<p>Equal areas, positive and negative, so integral 1 to $a = 0$</p> $6a - 24\sqrt{a} + 18 = 0$ $a - 4\sqrt{a} + 3 = 0$ <p>We need $a = 9$</p>
	Equates the answer to part (a) to 0 or Finds intersection point with the x axis and evaluates an integral between 1 and their x value. NB Correct x value is 4	3.1a	M1	
	Solves $6a - 24\sqrt{a} + 18 = 0$ to obtain a value for a or \sqrt{a} or Equates their area of R_1 to their integrated expression in term of a for R_2 Must have used a positive value for the area of R_1 NB Correct expression for R_2 is $6a - 24\sqrt{a} + 24$	1.1a	M1	
	Completes a reasoned argument with no errors to deduce $a = 9$	2.2a	R1	
	Subtotal		4	

	Question 8 Total		7	
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