Question	Scheme	Marks	AOs
9(a)	$x=\frac{7}{3}$	B1	2.2a
		(1)	
(b)	$x=2\Rightarrow\lvert 7-3x\rvert=\lvert 7-6\rvert=1,\ -2x^2+14x-19=1$ So the x coordinate of A is 2	B1	2.1
		(1)	
(c)	At B $3x-7=-2x^2+14x-19\Rightarrow 2x^2-11x+12=0\Rightarrow x=...$	M1	3.1a
	$2x^2-11x+12=0\Rightarrow x=4$	A1	1.1b
	$\Rightarrow y=5$	A1	1.1b
		(3)	
(d)	$\int\left(-2x^2+14x-19\right)\,\mathrm{d}x=-\frac{2x^3}{3}+7x^2-19x\,(+c)$	M1 A1	1.1b 1.1b
	Area of triangles: $\frac{1}{2}\left(\frac{7}{3}-2\right)\times 1+\frac{1}{2}\left(4-\frac{7}{3}\right)\times 5\quad\left(=\frac{13}{3}\right)$	M1	2.1
	Area of R is: $\left[-\frac{2x^3}{3}+7x^2-19x\right]_2^4-\frac{13}{3}=-\frac{128}{3}+112-76-\left(-\frac{16}{3}+28-38\right)-\frac{13}{3}$	ddM1	3.1a
	$=\frac{13}{3}$	A1	1.1b
		(5)	
	(d) Alternative:		
	$\int\left(-2x^2+14x-19-7+3x\right)\,\mathrm{d}x=-\frac{2x^3}{3}+7x^2-19x-7x+\frac{3x^2}{2}\,(+c)$ **or** $\int\left(-2x^2+14x-19+7-3x\right)\,\mathrm{d}x=-\frac{2x^3}{3}+7x^2-19x+7x-\frac{3x^2}{2}\,(+c)$	M1 A1	1.1b 1.1b
	$\left[-\frac{2x^3}{3}+7x^2-19x-7x+\frac{3x^2}{2}\right]_2^{\frac{7}{3}}$ **or** $\left[-\frac{2x^3}{3}+7x^2-19x+7x-\frac{3x^2}{2}\right]_{\frac{7}{3}}^4$	M1	2.1
	$\left[-\frac{2x^3}{3}+7x^2-19x-7x+\frac{3x^2}{2}\right]_2^{\frac{7}{3}}+\left[-\frac{2x^3}{3}+7x^2-19x+7x-\frac{3x^2}{2}\right]_{\frac{7}{3}}^4=...$	ddM1	3.1a
	$=\frac{13}{3}$	A1	1.1b
		(5)	
			(10 marks)

Notes
(a) M1: Deduces the correct value of x (b) B1: Substitutes $x = 2$ into both equations, obtains $y = 1$ both times and makes a conclusion. (c) M1: Correct strategy for *B*. E.g. attempts to solve $3x - 7 = -2x^2 + 14x - 19$ and solves the resulting 3TQ A1: For $x = 4$ A1: For $y = 5$ (d) M1: For $x^n \to x^{n+1}$ for the quadratic curve A1: Correct integration M1: For a complete attempt at the area of both triangles using their vertex coordinates and their *A* and *B* ddM1: For a correct overall strategy for the area of *R*. This requires an attempt at the area under the curve between *A* and *B* with the subtraction of the area of the 2 triangles. Depends on both previous M marks. A1: Correct value **(d) Alternative:** M1: For $x^n \to x^{n+1}$ for either subtraction A1: Correct integration for either part M1: For a complete attempt at the area of one of the required areas ddM1: For a correct overall strategy for the area of *R*. Depends on both previous method marks. A1: Correct value