Q	Marking instructions	AO	Marks	Typical solution
10(a)	Substitutes $x = 4$ and sets equal to zero PI by correct answer	3.1a	M1	$2(4) - \frac{4}{\sqrt{4}} + b = 0$ $8 - 2 + b = 0$ $b = -6$
	Obtains $b = -6$	1.1b	A1	
	Subtotal		**2**	

Q	Marking instructions	AO	Marks	Typical solution
10(b)	Differentiates $\frac{dy}{dx}$ to obtain an expression of the form $2 + kx^{-\frac{3}{2}}$ Or Evaluates $\frac{dy}{dx}$ for one x value on either side of $x = 4$	3.1a	M1	$\frac{d^2y}{dx^2} = 2 + 2x^{-\frac{3}{2}}$ $= 2 + 2(4)^{-\frac{3}{2}}$ $= \frac{9}{4} > 0$ $\therefore$ Minimum turning point
	Substitutes $x = 4$ into their $\frac{d^2y}{dx^2}$ Or Evaluates $\frac{dy}{dx}$ for x values on both sides of $x = 4$	1.1a	M1	
	Completes reasoned argument to show that the turning point is a minimum	2.1	R1	
	Subtotal		**3**	

Q	Marking instructions	AO	Marks	Typical solution
10(c)	Integrates $\frac{dy}{dx}$ with at least one term correct	1.1a	M1	$y = x^2 - 8\sqrt{x} - 6x + c$ $1 = (9)^2 - 8\sqrt{9} - 6(9) + c$ $1 = 3 + c$ $c = -2$ $y = x^2 - 8\sqrt{x} - 6x - 2$
	Obtains $y = x^2 - 8\sqrt{x} - 6x + c$ Condone missing $+ c$ FT their b	1.1b	A1F	
	Substitutes $x = 9$ and $y = 1$ into their integrated equation to obtain a value for c	1.1a	M1	
	Obtains $y = x^2 - 8\sqrt{x} - 6x - 2$	1.1b	A1	
	Subtotal		**4**	

	Question 10 Total		**9**	