

Q	Marking instructions	AO	Marks	Typical solution
9	Expresses all terms as powers of $x$ at least 2 correct. PI	1.1a	M1	$y = ax^{-0.5} + bx^2 + cx^{-3}$
	Differentiates at least one of their negative powers correctly	1.1a	M1	$\frac{dy}{dx} = -\frac{1}{2}ax^{-1.5} + 2bx - 3cx^{-4}$
	Obtains completely correct differential	1.1b	A1	$\frac{d^2y}{dx^2} = \frac{3}{4}ax^{-2.5} + 2b + 12cx^{-5}$
	Differentiates again, powers and signs correct	1.1a	M1	As $a, b, c$ and $x$ are all $> 0$ , all terms must be positive
	Deduces that $\frac{d^2y}{dx^2}$ is positive	2.2a	A1F	so $\frac{d^2y}{dx^2}$ is positive
	Explains that positive second differential shows that turning point is a minimum	2.4	E1F	so turning point is a minimum
	Shows completely correct mathematics throughout, including coefficients of $\frac{d^2y}{dx^2}$ must refer to $a, b, c$ and $x$ being $> 0$	2.1	R1	
	<b>Total</b>		<b>7</b>	