

Question			Answer	Marks	AO	Guidance
5	(a)		$\frac{dy}{dx} = 8x - x^{-2}$ $8x - x^{-2} = 0$ $(\frac{1}{2}, 3)$	M1 A1 M1 A1 A1 [5]	1.1a 1.1 2.1 1.1 1.1	Attempt to differentiate, at least one term correct All correct, oe Their $\frac{dy}{dx} = 0$ (must see this step) For $x = \frac{1}{2}$ (and no further invalid solutions) For $y = 3$ www
5	(b)		$\frac{d^2y}{dx^2} = 8 + 2x^{-3}$ This is positive (for $x = \frac{1}{2}$ or for all $x > 0$) Hence minimum	M1 A1FT [2]	3.1a 2.4	Attempt to differentiate their $\frac{dy}{dx}$, at least one term correct Or > 0 etc. No need to show calculation but if present it must be correct for their x (e.g. 24) Need both lines for A1 and no incorrect working in this part (FT their $\frac{dy}{dx}$ and their x but do not award this mark for an incorrect $\frac{d^2y}{dx^2}$ or incorrect method in part (b)). If correct work in this part leads to $\frac{d^2y}{dx^2} < 0$ then conclusion should be 'maximum'.
5	(c)		$8x - x^{-2} \geq 0$ $x \geq \frac{1}{2}$	M1 A1FT [2]	3.1a 1.1	Their $\frac{dy}{dx} \geq 0$. Allow $>$ FT their x . Allow $>$ and allow without working, but www.