Question			Answer	Marks	AO	Guidance
5	(a)		**DR** $\frac{dy}{dx} = -2x + 32x^{-3} = 0$ $x^4 = 16$ So $x = \pm 2$ When $x = \pm 2, y = 7$ [So the points are $(-2, 7)$ and $(2, 7)$]	**M1** **A1** **A1**	**1.1a** **1.1b** **1.1b**	Attempt to differentiate and equate to zero soi Both *x*-values and no others. FT their *x*-coordinate(s) Do not FT $x = 0$
				[3]		
5	(b)		**DR** $\frac{d^2y}{dx^2} = -2 - 96x^{-4}$ When $x = 2, \frac{d^2y}{dx^2} = -2 - \frac{96}{16} < 0$ When $x = -2, \frac{d^2y}{dx^2} = -2 - \frac{96}{16} < 0$ So both points are maximum points	**M1** **E1**	**2.1** **2.1**	Attempts to find the second derivative. FT their $\frac{dy}{dx}$ Or convincing statement that $\frac{d^2y}{dx^2} < 0$ for any $x[\neq 0]$ because x^{-4} is always positive **AG** Complete argument required from correct second derivative and their $x \neq 0$. ISW if $-2 - \frac{96}{x^4}$ wrongly evaluated. Also allow for one point established and an argument from symmetry
			Alternative method $\frac{dy}{dx} > 0$ for $0 < x < 2$ and $\frac{dy}{dx} < 0$ for $x > 2$ and $\frac{dy}{dx} > 0$ for $x < -2$ and $\frac{dy}{dx} < 0$ for $-2 < x < 0$ So both points are maximum points	**M1** **E1**		Evaluating gradient for suitable values of *x* on either side of each turning point Also allow for *y*-coordinates in these ranges. AG Complete argument required from correct first derivative and their $x \neq 0$. Also allow for one point established and an argument from symmetry
				[2]		