

Question			Answer	Mark	AO	Guidance
6	(a)	(i)	$\left[\frac{dy}{dx} = \right] 12x^3 - 12x^2 - 12x + 12$	M1 A1 [2]	1.1 2.1	Attempt $\frac{dy}{dx}$, ≥ 3 terms correct All correct (ISW if candidates go on to divide by 12, but this answer oe must be seen)
		(ii)	$\left[\frac{dy}{dx} = 0\right] \Rightarrow 12x^3 - 12x^2 - 12x + 12 = 0$ $\Rightarrow 12(x^3 - x^2 - x + 1) = 0$ $x = 1$ and $x = -1$	M1 A1 [2]	1.1 1.1	Setting their $\frac{dy}{dx} = 0$ and attempt to solve (i.e. reach one or more values for x). May be implied by correct answers And no others. May be done BC Sight of $x = 1$ and $x = -1$ (and no other solutions) 2/2 ISW any attempt to find corresponding y values.
6	(b)		$\left[\frac{d^2y}{dx^2} = \right] 36x^2 - 24x - 12 = 0$ oe $x = 1$ and $x = -\frac{1}{3}$ Only one of these [$x = 1$] gives a stationary point oe	M1 A1* A1 dep* [3]	2.1 1.1 2.2a	FT their $\frac{dy}{dx}$ (≥ 2 terms correct when differentiating their $\frac{dy}{dx}$ a second time). May be implied by A1 but if both correct roots not seen must be set = 0 for this mark. Allow $x^3 - x^2 - x + 1 \Rightarrow 3x^2 - 2x - 1 = 0$ A1 for both correct roots and no others, i.e. points of inflection Statement needed. Dependent on previous A1. Accept e.g.: - One of these $\left[x = -\frac{1}{3}\right]$ is not a stationary point A1 $x = -\frac{1}{3}$ is not a stationary point A1 - Categorising both points (i.e. $x = 1$ is stationary and a point of inflection, $x = -\frac{1}{3}$ is not stationary...) A1 But not “only one of these is a point of inflection” A0