	Question		Answer	Marks	AO	Guidance	
6	**(i)**		f(x) = (x – 3)($2x^2 - x - 1$)	**M1**	**2.2a**	Attempt complete division by ($x - 3$)	Must be complete attempt Division – must be subtracting on each line (allow one error) Coefficient matching – valid attempt at all 3 coefficients Inspection – must give three correct terms on expansion Synthetic division – allow one error
				A1	**1.1**	Obtain correct quotient	Could be seen in division Cannot be implied by $A = 2$ etc
			f(x) = (x – 3)($2x + 1$)(x – 1)	**A1**	**1.1**	Obtain fully factorised f(x)	Must be as product of all 3 linear factors Correct answer gets full marks, but an incorrect factorisation such as (x – 3)($x + \frac{1}{2}$)(x – 1) is M0 unless method is seen
				[3]			
	(ii)		Sketch of positive cubic	**B1**	**1.2**	Three roots and two stationary points	Ignore any intercepts for this mark
			(–0.5, 0), (1, 0), (3, 0), (0, 3)	**B1**	**2.2a**	All intercepts correctly indicated	ft their three factors Could be given as coordinates, or just values marked on relevant axes BOD if coordinates transposed as long as marked on correct axis
				[2]			

Question			Answer	Marks	AO	Guidance	
(iii)			$\{x : x < -0.5\} \cup \{x : 1 < x < 3\}$	**M1**	**2.2a**	Identify one set of values	ft their cubic roots in **(ii),** even if not 3 real, distinct, roots Allow notation using just inequalities Allow interval notation eg $(-\infty, -0.5)$ and/or $(1, 3)$ If both sets of values given then ignore linking sign for this mark
				A1ft	**2.5**	Fully correct solution in set notation	ft their cubic roots in **(ii)**, as long as 3 real, distinct, roots Each set should have the correct structure ie $\{x:$ $\}$ with the sets linked by $\cup$ Allow equivs eg $\{x : x < -0.5\} \cup \{x : x > 1\} \cap \{x : x < 3\}$ eg $(-\infty, -0.5) \cup (1, 3)$ Do not accept $(x < -0.5) \cup (1 < x < 3)$
				[2]			
(iv)			$y = 2(2x)^3 - 7(2x)^2 + 2(2x) + 3$ $\quad = 16x^3 - 28x^2 + 4x + 3$ OR $y = (2x - 3)(4x + 1)(2x - 1)$	**M1**	**1.2**	Attempt f($2x$) or f($0.5x$)	Condone lack of brackets as long as implied by later work M0 if each term just multiplied or divided by 2
				A1	**1.1**	Obtain correct equation	Must have $y = \ldots$ Condone f($2x$) = …, or f(x) = … Accept unsimplified equiv ISW an incorrect attempt to expand
				[2]			