

Q	Marking instructions	AO	Marks	Typical solution
6(a)	Draws cubic curve in the correct orientation	1.1a	M1	
	Deduces minimum or maximum at (0,0) on their curve	2.2a	M1	
	Draws a fully correct cubic curve with x -intercept at $-\frac{a}{2}$ shown on the curve	2.2a	A1	
Subtotal			3	

Q	Marking instructions	AO	Marks	Typical solution
6(b)(i)	Substitutes $x = -3$ into $p(x)$	1.1a	M1	$(-3)^2(2 \times -3 + a) + 36 = 0$ $-54 + 9a + 36 = 0$ $9a - 18 = 0$ $a = 2$
	<p>Condone missing bracket for $(-3)^2$</p> <p>Must see an expression in terms of a</p> <p>Completes reasoned argument with at least one correct intermediate step and no error seen to show $a = 2$ AG</p> <p>Must set an expression for $p(-3) = 0$</p> <p>Condone recovery of missing bracket for $(-3)^2$ to get 9</p> <p>Do not condone any other missing bracket</p>			
Subtotal			2	

Q	Marking instructions	AO	Marks	Typical solution
6(b)(ii)	States 'translation' or 'translate' or 'translated'	1.1b	B1	Translation $\begin{pmatrix} 0 \\ 36 \end{pmatrix}$
	Must not have other transformation other than translation			
	States the vector $\begin{pmatrix} 0 \\ 36 \end{pmatrix}$ or $36\mathbf{j}$	1.1b	B1	
	Subtotal		2	

Q	Marking instructions	AO	Marks	Typical solution
6(b)(iii)	Explains that the translated graph only has one real solution or only has a root at -3	2.4	E1	The translated graph will only have one real solution. $b^2 - 4ac < 0$
	Condone missing 'real'			
	Deduces that the discriminant of $2x^2 + bx + c$ must be negative and shows the required result	2.2a	E1	Hence $b^2 - 4 \times 2 \times c < 0$ $b^2 < 8c$
	Do not allow the use of $a = 2$ with reference to part (b)(i)			
	Allow $b^2 - 8c < 0$ following from $b^2 - 4ac$ seen			
	Subtotal		2	

	Question 6 Total		9	
--	-------------------------	--	----------	--