Question		Answer	Marks	AO	Guidance
13	(a)		B1 B1 [2]	3.1a 1.1	Continuous curve with intercept at (–3, 0) and touching axis at (½, 0) with no other x-intercepts Cubic of correct orientation with local minimum in 3rd quadrant and local maximum touching positive x-axis with y-intercept at (0, –0.6) **SC B1** Fully correct curve with no values on the axes.
13	(b)	$2x^2 + 6x - x - 3$ or $2x^2 + 5x - 3$ or $4x^2 - 2x - 2x + 1$ or $4x^2 - 4x + 1$ or $4x^3 + 8x^2 - 11x + 3$ **seen** as part of expansion into cubic; multiplication of their cubic by –0.2 **oe** $y = -0.8x^3 - 1.6x^2 + 2.2x - 0.6$ **oe**	M1 M1 A1	3.1a 1.1 1.1	Attempt to expand at least one pair of brackets allow going straight to cubic **or** $x^2 - \frac{1}{2}x - \frac{1}{2}x + \frac{1}{4}$ or $x^2 + 3x - \frac{1}{2}x - \frac{3}{2}$ or $x^3 + 2x^2 - \frac{11}{4}x + \frac{3}{4}$ **or** multiplication of their cubic by –0.8 **oe** Condone multiplication by any negative scale factor for this mark. Must include $y =$
		Alternative Method $d = -0.6$ or $-27a + 9b - 3c + d = 0$ **oe** or $\frac{1}{8}a + \frac{1}{4}b + \frac{1}{2}c + d = 0$ **oe** or $\frac{dy}{dx} = 3ax^2 + 2bx + c$ leading to $\frac{3}{4}a + b + c = 0$ **oe** $d = -0.6$ and $-27a + 9b - 3c + d = 0$ **oe** and $\frac{1}{8}a + \frac{1}{4}b + \frac{1}{2}c + d = 0$ **oe** and $\frac{dy}{dx} = 3ax^2 + 2bx + c$ leading to $\frac{3}{4}a + b + c = 0$ **oe** $y = -0.8x^3 - 1.6x^2 + 2.2x - 0.6$	M1 M1 A1		Any one of the four substitutions seen Infer $d = -0.6$ from a cubic with a constant term of –0.6 seen All four substitutions seen All 4 substitutions must be seen. Must include $y =$ Braille version: replace a, b, c and d with p, q, r and s.
			[3]		