

Q	Marking Instructions	AO	Marks	Typical Solution
4(a)	Demonstrates $p(-3) = 0$	AO1.1b	B1	$p(-3) = 2(-3)^3 + 7(-3)^2 + 2(-3) - 3$ $= -54 + 63 - 6 - 3 = 0$ $p(-3) = 0 \Rightarrow x + 3 \text{ is a factor}$
	Constructs rigorous mathematical proof (to achieve this mark, the student must clearly calculate and state that $p(-3) = 0$ and clearly state that this implies that $x + 3$ is a factor)	AO2.1	R1	
b)	Factorises the numerator and denominator (this mark is achieved for any reasonable attempt at factorisation through the selection of an appropriate method, eg long division)	AO1.1a	M1	$\frac{(x+3)(2x^2+x-1)}{(2x+1)(2x-1)}$ $= \frac{(x+3)(2x-1)(x+1)}{(2x+1)(2x-1)}$ $= \frac{(x+3)(x+1)}{(2x+1)}, x \neq \pm \frac{1}{2}$
	Finds second factor in numerator or fully factorises denominator (PI by complete factorisation)	AO1.1b	A1	
	Finds fully correct factorised expression (PI by complete factorisation)	AO1.1b	A1	
	Obtains a completely correct solution with restriction on domain stated	AO1.1b	A1	
Total			6	