

Question		Answer	Marks	AOs	Guidance	
6	i	$f(-1) = 4 \times (-1)^3 - 3(-1) + 1 = -4 + 3 + 1 = 0$ <p>Therefore <math>(x + 1)</math> is a factor</p>	<p><b>M1</b></p> <p><b>A1</b> [2]</p>	<p><b>2.1</b></p> <p><b>2.2a</b></p>	<p><b>DR</b> Use of <math>f(-1)</math> must be seen. Do not allow for algebraic division.</p> <p>Clear conclusion must be made</p>	<p>Allow without conclusion if preceded by “If <math>f(-1) = 0</math> then <math>(x + 1)</math> will be a factor” or similar</p>
	ii	$f(x) = (x + 1)(4x^2 - 4x + 1) = 0$ $= (x + 1)(2x - 1)^2 = 0$ $x = -1, \frac{1}{2} \text{ [repeated]}$	<p><b>M1</b></p> <p><b>A1</b></p> <p><b>A1</b> [3]</p>	<p><b>1.1a</b></p> <p><b>1.1b</b></p> <p><b>1.1b</b></p>	<p><b>DR</b> Attempt to divide or to factorise by inspection with <math>4x^2</math></p> <p>correct quadratic factor seen or implied by correct linear factors</p> <p>Both roots seen derived from 3 correct linear factors or use of quadratic formula</p>	<p>Allow full credit for <math>(x + 1)(4x - 2)(x - 0.5)</math></p> <p>No marks for solving the cubic on the calculator</p>