	Polynomials	
1	(a) Show that $(x - 1)$ is a factor of $2x^3 + x^2 - 8x + 5$	2
	(b) Hence fully factorise $2x^3 + x^2 - 8x + 5$	3
	(c) Solve $2x^3 + x^2 - 8x + 5 = 0$	1
2	(a) Show that $(x - 4)$ is a factor of $x^3 - 5x^2 + 2x + 8$	2
	(b) Hence fully factorise $x^3 - 5x^2 + 2x + 8$	3
	(c) Solve $x^3 - 5x^2 + 2x + 8 = 0$	1
3	(a) Show that $(x - 1)$ is a factor of $f(x) = 3x^3 + 4x^2 - 5x - 2$ and hence factorise $f(x)$ fully	5
	(b) Solve $3x^3 + 4x^2 - 5x - 2 = 0$	1
4	Fully factorise $2x^3 + 5x^2 - 4x - 3$	5
5	(a) Show that x = 2 is a root of the equation $2x^3 + x^2 - 13x + 6 = 0$	5
	(b) Hence find the other roots	1
6	(a) Show that $(x - 2)$ is a factor of $x^3 - 3x^2 + 4$	2
	(b) Hence fully factorise this polynomial	3
	(c) Solve $x^3 - 3x^2 + 4 = 0$	1
	(d) Identify the coordinates of the turning point at the x-axis	1

	Polynomials - Answers
1.	using synthetic division for x = *1* 1 | 2 1 -8 5 0 2 3 -5 2 3 -5 |0 No remainder, (x - 1) is a factor $2x^3 + x^2 - 8x + 5 = (x - 1)(2x^2 + 3x - 5)$ $= (x - 1)(2x + 5)(x - 1)$ Solutions are $x = 1$, $x = -5/2$, $x = 1$
2.	using synthetic division for x = *4* 4 | 1 -5 2 8 0 4 -4 -8 1 -1 -2 |0 No remainder, (x - 4) is a factor $x^3 - 5x^2 + 2x + 8 = (x - 4)(x^2 - x - 2)$ $= (x - 4)(x + 1)(x - 2)$ solutions are $x = 4$, $x = -1$, $x = 2$
3	using synthetic division for x = *1* 1 | 3 4 -5 -2 0 3 7 2 3 7 2 |0 No remainder, (x - 1) is a factor $3x^3 + 4x^2 - 5x - 2 = (x - 1)(3x^2 + 7x + 2)$ $= (x - 1)(3x + 1)(x + 2)$ solutions are $x = 1$, $x = -1/3$, $x = -2$
4	using synthetic division for x = *1* 1 | 2 5 -4 -3 0 2 7 3 2 7 3 |0 No remainder, (x - 1) is a factor $2x^3 + 5x^2 - 4x - 3 = (x - 1)(2x^2 + 7x + 3)$ $= (x - 1)(2x + 1)(x + 3)$ Solutions are $x = 1$, $x = -1/2$, $x = -3$
5	using synthetic division for x = *2* 2 | 2 1 -13 6 0 4 10 -6 2 5 -3 |0 No remainder, (x - 2) is a factor, $x = 2$ is a root $2x^3 + x^2 - 13x + 6 = (x - 2)(2x^2 + 5x - 3)$ $= (x - 2)(2x - 1)(x + 3)$ roots are $x = 2$, $x = ½$ and $x = -3$
6	using synthetic division for x = *2* 2 | 1 -3 0 4 0 2 -2 -4 1 -1 -2 |0 No remainder, (x - 2) is a factor $x^3 - 3x^2 + 4 = (x - 2)(x^2 - x - 2)$ $= (x - 2)(x - 2)(x + 1)$ Solutions are $x = 2$, $x = 2$ and $x = -1$ The double root $x = 2$ shows a turning point at (2,0)