Paper: 1MA1/3H				
Question	**Working**	**Answer**	**Mark**	**Notes**
15 (a)		Shown	M1	for method to establish at least one root between $x = 0$ and $x = 1$, eg f(0) = – 5 and f(1) = 3
			C1	for correct values and a deduction about the roots eg as there is a sign change there must be at least one root between $x = 0$ and $x = 1$ (as f is continuous)
(b)		Shown	C1	for a correct first step in rearrangement, eg $x(x^2 + 7) – 5 = 0$ or $x^3 + 7x = 5$
Q1			C1	for clear and correct steps showing complete rearrangement
(c)	$x_1 = 0.625$	0.6704(483001)	M1	for substitution of 1 into the formula (to get 0.625)
	$x_2 = 0.6765327696$		M1	for substitution of "$x_1 = 0.625$" and "$x_2 = 0.6765327696$" to give x_2 and x_3
	$x_3 = 0.6704483001$		A1	0.6704(483001)
(d)		Comment	M1	substitutes answer to (c) into expression (to get –0.00549...)
			C1	appropriate comment, eg accurate as answer is close to 0

Paper 1MA1: 3H				
Question	**Working**	**Answer**	**Mark**	**Notes**
16 (a) **Q2** (b)		x_1=-2.64 x_2= -2.57392 x_3=-2.603767255 Statements	M1 M1 A1 C1 C1	for substitution of −2.5 into the equation (to get $x_1 = -2.64$) for substitution of "$x_1 = -2.64$" and "$x_2 = -2.57392$" to give x_2 and x_3 for $x_1 = -2.64$ oe, $x_2 = -2.57(392)$ and $x_3 = -2.6(03767255)$ Condone $x_3 = -2.61$ if $x_2 = -2.57$ is used in the substitution Connection between equation and iterative form in (a) e.g. rearrangement Statement e.g. iteration is an estimation of a solution

Paper: 1MA1/3H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
18 (a)	Correct statement	C1	for substituting both 1 and 2 into $x^3 + x$ or into $x^3 + x - 7$	All arithmetic shown must be correct. Ignore any additional trials shown.
		C1	for values 2 and 10 plus explanation that these are above and below 7, or for values -5 and 3 plus explanation that there is a change of sign, thus implying a solution lies between 1 and 2	
(b)	Correct rearrangement	C1	for correct algebraic rearrangement	
Q3 (c)	1.74	M1	for substitution of 2 into the formula eg $\sqrt[3]{7-2}$ (= 1.70997…)	$x_1 = 1.70997\ldots$ $x_2 = 1.74241\ldots$ $x_3 = 1.73884\ldots$
		M1	for a substitution of x_1 to give x_2 (= 1.74241...)	Accept an accuracy of 2 dp or more rounded or truncated for values of x_1 and x_2
		A1	for answer in the range 1.738 to 1.74	Award the marks for 1.7 on the answer line provided correct iterations are shown in the working space.

Paper: 1MA1/2H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
16 (a)	$x_1 = 1.817$ $x_2 = 1.853$ $x_3 = 1.846$	M1	for a correct method to find x_1 eg $\sqrt[3]{10-2\times 2}$ (= 1.8171……)	
		M1	(dep on M1) for substitution of x_1 to give x_2 **and** x_2 to give x_3	
		A1	for x_1 = 1.81(71…), x_2 = 1.85(33…) and x_3 = 1.84(62.…)	Accept an accuracy of 2dp or more rounded or truncated
(b)	$a = 2$, $b = -10$	C1	cao	
Q4				