

1	(a)		$x_1 = -2.64$ $x_2 = -2.57392$ $x_3 = -2.603767255$	M1 M1 A1	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
	(b)		Statements	C1 C1	Connection between equation and iterative form in (a) e.g. rearrangement Statement e.g. iteration is an estimation of a solution

2	(a)		Shown	M1 C1	for method to establish at least one root between $x = 0$ and $x = 1$, eg $f(0) = -5$ and $f(1) = 3$ 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 C1	for a correct first step in rearrangement, eg $x(x^2 + 7) - 5 = 0$ or $x^3 + 7x = 5$ for clear and correct steps showing complete rearrangement
	(c)	$x_1 = 0.625$ $x_2 = 0.6765327696$ $x_3 = 0.6704483001$	0.6704(483001)	M1 M1 A1	for substitution of 1 into the formula (to get 0.625) for substitution of " $x_1 = 0.625$ " and " $x_2 = 0.6765327696$ " to give x_2 and x_3 0.6704(483001)
	(d)		Comment	M1 C1	substitutes answer to (c) into expression (to get $-0.00549...$) appropriate comment, eg accurate as answer is close to 0

3	(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. $x_1 = 1.70997...$ $x_2 = 1.74241...$ $x_3 = 1.73884...$ Accept an accuracy of 2 dp or more rounded or truncated for values of x_1 and x_2 Award the marks for 1.7 on the answer line provided correct iterations are shown in the working space.
			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 1.74	C1	for correct algebraic rearrangement	
	(c)		M1	for substitution of 2 into the formula eg $\sqrt[3]{7 - 2}$ ($= 1.70997...$)	
			M1	for a substitution of x_1 to give x_2 ($= 1.74241...$)	
		A1	for answer in the range 1.738 to 1.74		

4	(a)	163 or 164	P1	uses formula eg $1.2 \times 200 - 50$ ($= 190$)
			P1	for complete process, eg May: $1.2 \times "190" - 50$ ($= 178$) and June: $1.2 \times "178" - 50$ ($= 163.6$)
	(b)	Statement	A1	for 163 or 164 C1 (dep P1) ft statement, eg there won't be any rabbits, fewer rabbits, decrease

5	788.4	P1	for substituting values, eg $1040 = K \times 1200 + 20$
		P1	for process to find K , eg $(1040 - 20) \div 1200$ oe ($= 0.85$)
		P1	for complete process, eg 09 17: " 0.85 " \times $1040 + 20$ ($= 904$); 09 18: " 0.85 " \times " 904 " $+ 20$
		A1	for 788.4 or 788 or 789

6	(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.....)	Accept an accuracy of 2dp or more rounded or truncated
			M1	(dep on M1) for substitution of x_1 to give x_2 and x_2 to give x_3	
			A1	for $x_1 = 1.81(71\dots)$, $x_2 = 1.85(33\dots)$ and $x_3 = 1.84(62\dots)$	
	(b)	$a = 2, b = -10$	C1	cao	