Paper: 1MA1/2H				
Question	**Working**	**Answer**	**Mark**	**Notes**
16 **Q1**	$$\dfrac{--4 \pm \sqrt{(-4)^2 - 4 \times 1 \times 1}}{2 \times 1}$$	0.268, 3.73	M1	for $x - 2 = \pm\sqrt{3}$ oe or one solution or use of $x^2 - 4x + 1 = 0$ to substitute into formula (allow one error in substitution)
			A1	$0.267 - 0.27, 3.7 - 3.74$

Paper: 1MA1/1H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
8	8 and –3	M1	for rearranging to get $x^2 - 5x - 24$ (= 0) **or** $-x^2 + 5x + 24$ (= 0)	Can be implied by $(x - 8)(x + 3)$ or $(-x + 8)(x + 3)$
Q2		M1	for $(x \pm 8)(x \pm 3)$ **or** $(x + a)(x + b)$ where $ab = -24$ or $a + b = -5$ **or** substitution into formula, condoning one sign error eg $(x =) \dfrac{--5 \pm \sqrt{(-5)^2 - 4 \times 1 \times -24}}{2 \times 1}$	
		A1	for 8 **and** –3	

Paper: 1MA1/3H

Question	Answer	Mark	Mark scheme	Additional guidance
9 (a)	$2x^3 + x^2 - 7x - 6$	M1	for a method to find the product of two linear expressions eg 3 correct terms out of 4 terms or 4 terms ignoring signs	Note that (eg) $-x - 6$ in expansion of $(x - 2)(2x + 3)$ is to be regarded as 3 correct terms.
		M1	for a complete method to obtain all terms, half of which are correct (ft their first product) eg $2x^3 - x^2 - 6x + 2x^2 - x - 6$	First product must be quadratic but need not be simplified or may be simplified incorrectly
Q3		A1	cao	
(b)	-5	M1	for beginning to combine indices eg 4+n or y^{-3+2}	
		A1	cao	
(c)	1.27 and -0.472	M1	for substitution into the formula	Condone one sign error in the substitution Accept -4^2 or $(-4)^2$
		M1	for simplifying to the form $\frac{-b \pm \sqrt{N}}{k}$ eg $\frac{4 \pm \sqrt{76}}{10}$ **or** 1.27 to 1.28 **or** -0.48 to -0.47	
		A1	for 1.27 to 1.28 **and** -0.48 to -0.47	

Paper: 1MA1/1H

Question	Answer	Mark	Mark scheme	Additional guidance
19 **Q4**	$-\dfrac{1}{2}\pm\dfrac{1}{2}\sqrt{2}$	P1	for using a common denominator, eg $\dfrac{x+1}{x(x+1)}-\dfrac{x}{x(x+1)}$ $(=4)$ or $\dfrac{x+1-x}{x(x+1)}(=4)$ **or** $x+1-x=4x(x+1)$	
		P1	for expanding and rearranging to get $4x^2+4x-1$ $(=0)$	Note we don't need to see "= 0"; just the LHS is sufficient Accept other forms of the 3 term quadratic, eg $4x^2+4x=1$
		P1	(dep P1) ft for a method to solve their 3 term quadratic equation, eg $\dfrac{-4\pm\sqrt{4^2-4\times4\times-1}}{2\times4}$ or $4\left[\left(x+\dfrac{1}{2}\right)^2-\left(\dfrac{1}{2}\right)^2\right]-1=0$ oe	Correct use of formula or completing the square
		A1	for values of x, eg $\dfrac{-4\pm\sqrt{32}}{8}$ or $\pm\sqrt{\dfrac{1}{2}}-\dfrac{1}{2}$ oe	
		A1	for $-\dfrac{1}{2}\pm\dfrac{1}{2}\sqrt{2}$ oe in the form $a\pm b\sqrt{2}$ where are a and b are fractions	Accept $a=-\dfrac{1}{2},b=\dfrac{1}{2}$ or $a=-\dfrac{1}{2},b=-\dfrac{1}{2}$

Paper: 1MA1/2H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
19	$-\dfrac{3}{2}$ and $\dfrac{2}{3}$	M1	for $(2x \pm 3)(3x \pm 2)$ **or** $(6x \pm 4)(x \pm \dfrac{9}{6})$ **or** $(6x \pm 4)(x \pm \dfrac{3}{2})$ **or** correct substitution into the quadratic formula, eg $\dfrac{-5 \pm \sqrt{5^2 - 4 \times 6 \times (-6)}}{2 \times 6}$	
Q5		M1	$(2x + 3)(3x - 2)$ $(6x - 4)(x + \dfrac{9}{6})$ **or** $(6x - 4)(x + \dfrac{3}{2})$ **or** $\dfrac{-5 \pm \sqrt{169}}{12}$ **or** one correct answer	
		A1	oe accept answers of -1.5 and in the range 0.66 to 0.67	

Paper: 1MA1/1H

Question	Answer	Mark	Mark scheme	Additional guidance
19	$\dfrac{5 \pm \sqrt{15}}{2}$	M1	for using a common denominator eg $\dfrac{x-1}{(2x-1)(x-1)} + \dfrac{3(2x-1)}{(2x-1)(x-1)}$ (= 1) **or** $(x-1) + 3(2x-1) = (2x-1)(x-1)$	
		M1	for expanding and rearranging to get $2x^2 - 10x + 5$ (= 0)	Note we don't need to see "= 0"; just the LHS is sufficient Accept other forms of the 3 term quadratic, eg $2x^2 - 10x = -5$
Q6		M1	(dep M1) ft for a method to solve their 3 term quadratic equation eg $\dfrac{10 \pm \sqrt{(-10)^2 - 4 \times 2 \times 5}}{2 \times 2}$ or $\dfrac{10 \pm \sqrt{60}}{4}$ **or** $2\left[\left(x - \dfrac{5}{2}\right)^2 - \left(\dfrac{5}{2}\right)^2\right] + 5 = 0$ oe	Correct use of formula or completing the square
		A1	cao	

Paper: 1MA1/1H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
17	−1, 2.5	P1	for process to form an equation, eg $\dfrac{x^2}{3x+5}=\dfrac{1}{2}$ **or** $2x^2 = 3x + 5$	
Q7		P1	for writing in a suitable form ready for solution, eg $2x^2 - 3x - 5\ (= 0)$ **or** $-2x^2 + 3x + 5\ (= 0)$	
		P1	(dep 1st P1) for process to solve quadratic equation of form $ax^2 + bx + c\ (= 0)$ eg $(2x - 5)(x + 1)\ \ (= 0)$ **or** $\dfrac{--3 \pm \sqrt{(-3)^2 - 4 \times 2 \times -5}}{2 \times 2}$	
		A1	for −1, 2.5 oe	

Paper: 1MA1/3H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
19 **Q8**	$\dfrac{5}{3}$	P1	for process to derive an equation in x, eg $\dfrac{x}{4x-1}=\dfrac{6x+5}{12x+31}$	
		P1	for complete process to remove fractions, eg $x(12x+31)=(6x+5)(4x-1)$	Must be correct use of brackets
		P1	for process to reduce to a quadratic equation, eg $12x^2-17x-5=0$	Award for correct LHS only.
		P1	for process to solve the quadratic equation by factorisation or use of quadratic formula, eg $(4x+1)(3x-5)=0$	Award for correct LHS only. Accept substitution into the formula; $\dfrac{--17\pm\sqrt{(-17)^2-4\times12\times-5}}{2\times12}$
		A1	for $\dfrac{5}{3}$ oe	Accept answers in the range 1.66 to 1.67 as equivalent