

Q1. (2017)

6(a)	<table><tr><td>x</td><td>-2</td><td>-1</td><td>0</td><td>1</td><td>2</td><td>3</td></tr><tr><td>y</td><td>4</td><td>0</td><td>-2</td><td>-2</td><td>0</td><td>4</td></tr></table>	x	-2	-1	0	1	2	3	y	4	0	-2	-2	0	4	B2	B1 1 or 2 values correct
	x	-2	-1	0	1	2	3										
	y	4	0	-2	-2	0	4										
Additional Guidance																	

Q2. (2017)

(A)

6(b)	5 or 6 points plotted correctly	M1	Correct or ft their table in (a) Tolerance of ± 1 small square Points can be implied by graph passing through them
	Correct smooth parabolic curve and y -coordinate of minimum point in the range $-2.5 \leq y \leq -2.1$	A1	Tolerance of ± 1 small square for the six correct points from the table No further tolerance for the minimum
	Additional Guidance		
	Tolerance of ± 1 small square means it is on the edges of or within the shaded area		
			
	Ignore extra points plotted		
	If their table in (a) has points that are beyond the grid these points will not be able to be plotted correctly		
	Ignore any curve drawn for $x < -2$ or $x > 3$		
	Curve passing through all correct points within tolerance		M1A1
	Ruled straight lines		A0

(B)

6(c)	$\frac{1}{2}$ or 0.5	B1	Ignore any y -coordinate
	Additional Guidance		
	(-2.25, 0.5)		B0
	Ignore their graph drawn in (b) – there is no ft		
	Condone 0.5, -2.25		B1

Q3. (2018)

26	Alternative method 1		
	$4x^2 + 5x + 3 = x + 2$	M1	
	$4x^2 + 5x - x + 3 - 2 (= 0)$ or $4x^2 + 4x + 1 (= 0)$	M1dep	oe collection of terms eg $4x^2 + 5x - x = 2 - 3$ or $4x^2 + 4x = -1$
	$(2x + 1)(2x + 1) (= 0)$ or $4\left(x + \frac{1}{2}\right)^2 (= 0)$ or $\frac{-4 \pm \sqrt{4^2 - 4 \times 4 \times 1}}{2 \times 4}$ or $b^2 - 4ac = 4^2 - 4 \times 4 \times 1$ or D(iscriminant) = $4^2 - 4 \times 4 \times 1$	A1	oe eg $\left(x + \frac{1}{2}\right)^2 (= 0)$ allow $b^2 - 4ac = 16 - 16$ or D(iscriminant) = $16 - 16$
	$(x =) -\frac{1}{2}$ with no other solutions with M2A1 seen or states that as brackets are the same there is only one solution with M2A1 seen or $b^2 - 4ac = 4^2 - 4 \times 4 \times 1 = 0$ and states there is only one solution with M2A1 seen or D(iscriminant) = $4^2 - 4 \times 4 \times 1 = 0$ and states there is only one solution with M2A1 seen	A1	oe allow $b^2 - 4ac = 16 - 16 = 0$ and states there is only one solution with M2A1 seen allow D(iscriminant) = $16 - 16 = 0$ and states there is only one solution with M2A1 seen

Q4. (2019)

1	$(-1, 6)$	B1	
	Additional Guidance		

Q5. (2020)

(A)

Q	Answer	Mark	Comments
7(a)	2 and 5 with no other roots	B2	either order B1 at least one correct root with up to one incorrect root SC1 (2, 0) or (5, 0) or (2, 5) or (5, 2)
	Additional Guidance		
	$x = 2$ and $x = 5$		B2
	2, 5 or 5, 2		B2
	(2, 0) and (5, 0) and 2 and 5		SC1
	(2, 0) and (5, 0) and -2 and -5		B0
	2, 0 and 5, 0 (both pairs imply coordinates)		SC1
	2, 0 or 5, 0 (one pair implies roots)		B1
	(0, 2) and (0, 5)		B0
	0, 2 and 0, 5 (both pairs imply coordinates)		B0
	0, 2 or 0, 5 (one pair implies roots)		B1
	Both answers embedded $2^2 - 7 \times 2 + 10 = 0$ and $5^2 - 7 \times 5 + 10 = 0$		B1
	$(x - 2)(x - 5)$		B0

(B)

Q	Answer	Mark	Comments
7(b)	3.5	B1	oe
	Additional Guidance		
	$x = 3.5$		B1
	$3.5x$		B0
	Ignore any y-coordinate even with brackets omitted eg $(3.5, -2.25)$ or $3.5, -2$ or $x = 3.5$ $y = -2.25$ or $x = 3.5$ $y = 2$		B1
	$(-2.25, 3.5)$		B0

Q6. (2021)

Q	Answer	Mark	Comments
25	$(x + 7)^2 \dots$	M1	
	$(x + 7)^2 - 7^2 + 52$ or $(x + 7)^2 - 49 + 52$ or $(x + 7)^2 + 3$	M1dep	
	M2 seen and $(-7, 3)$	A1	
	Additional Guidance		
	Answer from other methods or with no method seen		M0M0A0
	Allow $(x + 7)(x + 7)$ for $(x + 7)^2$ throughout		
	Condone inclusion of $= 0$ in all working		
	Ignore any solution attempt for $(x + 7)^2 + 3 = 0$		

Q7. (2023)

(A)

Q	Answer	Mark	Comments
26(a)	$(0, 2)$	B1	
	Additional Guidance		

(B)

Q	Answer	Mark	Comments
26(b)	$y = -x^2$	B1	oe equation eg $x^2 = -y$
	Additional Guidance		
	$y = -1x^2 + 0$		B1
	$y = -(x^2)$		B1
	$-x^2$		B0

(C)

Q	Answer	Mark	Comments
26(c)	Translation	B1	allow eg translate(d)
	$\begin{pmatrix} -3 \\ 0 \end{pmatrix}$	B1	
	Additional Guidance		
	Do not accept a vector given as coordinates or with missing brackets or with 'fraction line'		
	Translation from (0, 0)		B1B0
	Translation horizontally by 3		B1B0
	Translate 3 to the left and 3 down		B1B0
	Reflect by $\begin{pmatrix} -3 \\ 0 \end{pmatrix}$		B0B1
	Giving a combined transformation is B0B0 Rotate by $\begin{pmatrix} -3 \\ 0 \end{pmatrix}$ and reflect in the x-axis		B0B0
	Ignore references to movement if vector is correct eg Move to the right by $\begin{pmatrix} -3 \\ 0 \end{pmatrix}$		B0B1

Q8. (2024)

(A)

Q	Answer	Mark	Comments
14(a)	$15 = 3^2 + c$ or $(c =) 6$	M1	oe
	$7^2 + \text{their } 6$	M1dep	oe
	55	A1	

(B)

Q	Answer	Mark	Comments
14(b)	It is impossible to tell	B1	