Mark schemes

Q1.

(−3, 6)

B1

[1]

Q2.

$(x^2 + 2x − 3) − (x^2 + x − 3)$

Or attempt to 'balance' equations

M1

$y = x$

A1

− 2.3 and 1.3

ft if M awarded and their line drawn

A1ft

[3]

Q3.

(a)   3   0   3

B1 for 1 or 2 correct

B2

(b)   4 or 5 of their points plotted correctly

M1

Fully correct smooth curve

A1

(c)   (1, −1)

B1

[5]

Q4.

$−\dfrac{3}{2}$ and $\dfrac{2}{5}$

B1

[1]

Q5.

(a)

x	−2	−1	0	1	2	3
y	4	0	−2	−2	0	4

B1   1 or 2 values correct

B2

(b)   5 or 6 points plotted correctly

   Correct or ft their table in (a)
   Tolerance of ±1 small square
   Points can be implied by graph passing through them

M1

Correct smooth parabolic curve

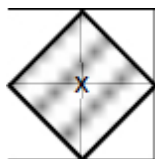   *Tolerance of ±1 small square for the six **correct** points from the table*
and y-coordinate of minimum point in the range $-2.5 \leq y \leq -2.1$

   No further tolerance for the minimum

A1

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

[4]

Q6.

(a)

x	−2	−1	0	1	2	3
y	4	0	−2	−2	0	4

   B1   1 or 2 values correct

B2

(b)   5 or 6 points plotted correctly

   Correct or ft their table in (a)
   Tolerance of ±1 small square
   Points can be implied by graph passing through them

M1

Correct smooth parabolic curve

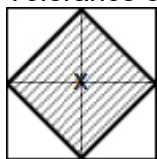   *Tolerance of ±1 small square for the six **correct** points from the table*

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and y-coordinate of minimum point in the range $-2.5 \leq y \leq -2.1$

No further tolerance for the minimum

A1

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

(c) $\dfrac{1}{2}$ or 0.5

Ignore any y-coordinate

B1

Additional Guidance

(–2.25, 0.5)

B0

Ignore their graph drawn in (b) – there is no ft

Condone 0.5, –2.25

B1

[5]

Q7.

(a)   –1   –5   –4

B1 for one or two correct in the correct place

B2

(b)   6 or 7 of their points plotted correctly

tolerance ± ½ square

M1

Fully correct smooth curve

tolerance ± ½ square

A1

Additional Guidance

Curve must be U-shaped and must not curve back in or have

vertical lines

(c)   [2.2, 2.3] and [–2.3, –2.2]

or their two values read off from the graph
tolerance ± ½ square

Additional Guidance
Do not accept coordinates

[5]

Q8.

(a)   4

B1

       –4

B1

(b)   their 7 points plotted correctly

$\pm \frac{1}{2}$ *square*
B1 ft for their 5 or 6 points plotted correctly

B2 ft

Smooth curve

through their 7 points ± $\frac{1}{2}$ square
Must be a U shape

B1 ft

(c)   [2.2, 2.4] or $\sqrt{5}$

ft their graph ± $\frac{1}{2}$ square

B1 ft

       [–2.2, –2.4] or $-\sqrt{5}$

ft their graph ± $\frac{1}{2}$ square

B1 ft

[7]

Q9.

(a)   − 6, 3 and − 1

B1 for 1 or 2 correct

B2

(b)   their 6 or 7 points plotted

$\pm \frac{1}{2}$ *square tolerance*

M1

Fully correct smooth curve

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$\pm \frac{1}{2}$ *square tolerance*

A1

(c) Two correct readings from their graph at $y = -1.5$
B1 for each
$\pm \frac{1}{2}$ *square tolerance*

B2ft

Additional Guidance
Accept the answers given in coordinates provided correct for their curve
Answers must come from their graph

[6]

Q10.

(a) (2, 16)

B1

(b) 12

B1

(c) −2 and 6

B1

[3]

Q11.

(a) 1   0   4 in correct positions
B1 for 2 correct

B2

(b) 6 or 7 of their points plotted correctly
$\pm \frac{1}{2}$ *square*

M1

Fully correct smooth curve
$\pm \frac{1}{2}$ *square*

A1

Additional Guidance
Curve should not curve back in from outside $x = 0$ or $x = 6$
Curve should not have vertical end of more than 2 small squares

(c) 3
ft their graph or correct

B1ft

[5]