

Mark schemes

Q1.

- (a) Correct graph

Min point at (0, 5), shape maintained

B1

- (b) Correct graph

Min point at (3, 0), shape maintained

B1

[2]

Q2.

- (a) $y = x^2 + 2$

oe eg $y - 2 = x^2$

B1

- (b) Same shape graph with vertex touching negative x -axis (within 1 mm) at any point > 2 mm from the origin

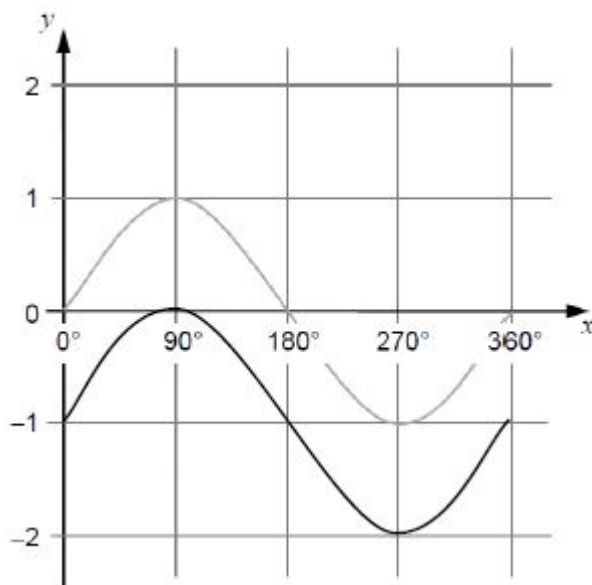
Allow any incorrect labelling

B1

[2]

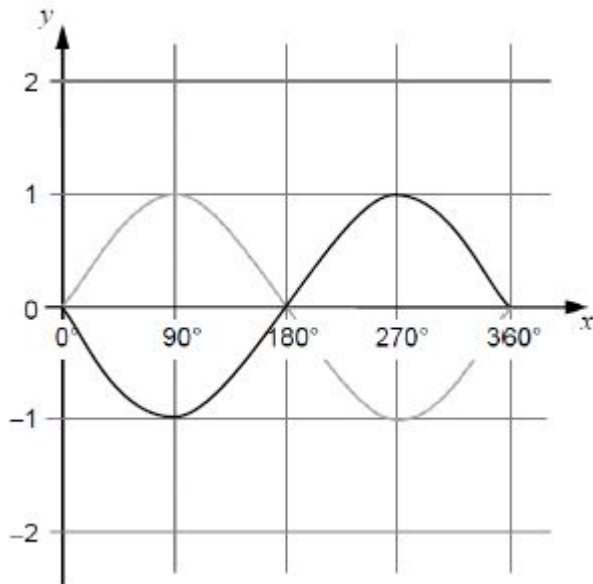
Q3.

- (a) Correct graph drawn



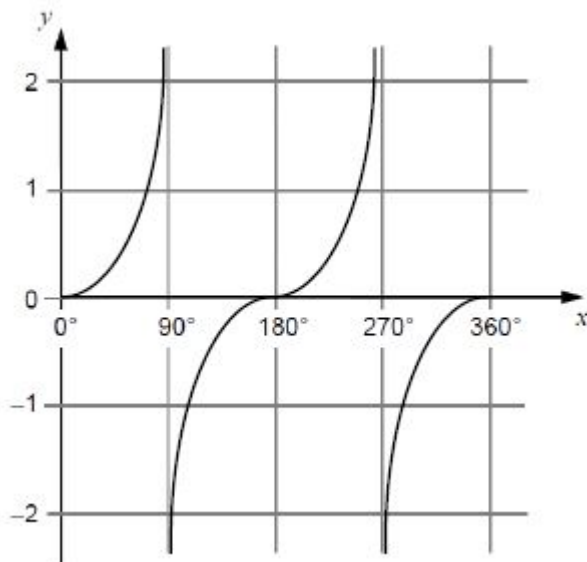
B1

- (b) Correct graph drawn



B1

(c) Correct graph drawn



B1

[3]

Q4.

(a) Fully correct graph passing through $(-2, -8)$ $(-1, -1)$ $(0, 0)$ $(1, 1)$ and $(2, 8)$

B1 x^3 or $y^3 = x$

or at least 4 points from $(-2, -8)$ $(-1, -1)$

$(0, 0)$ $(1, 1)$ and $(2, 8)$ plotted or seen in a table

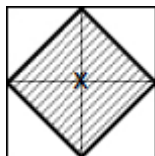
Tolerance of ± 1 small square

Points can be implied by graph passing through them

B2

Additional Guidance

Tolerance of ± 1 small square means it is on the edges of or within the shaded area



Ignore graph drawn outside of $-2 \leq x \leq 2$

Ruled straight lines joining $(-2, -8)$ $(-1, -1)$ $(0, 0)$ $(1, 1)$ and $(2, 8)$

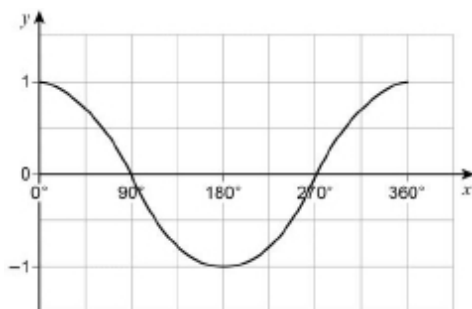
B1

Condone positive gradient at $(0, 0)$

Ignore working lines if fully correct graph seen

B2

(b) Fully correct graph



B1 $\sin(x + 90)$ or $\cos x$ or at least 4 points from $(0, 1)$ $(90, 0)$ $(180, -1)$ $(270, 0)$ and $(360, 1)$ plotted or seen in a table
Mark intention

B2

Additional Guidance

Ignore graph drawn outside of $0^\circ \leq x \leq 360^\circ$

Ignore working lines if fully correct graph seen

B2

Ruled straight lines joining $(0, 1)$ $(90, 0)$ $(180, -1)$ $(270, 0)$ and $(360, 1)$

B1

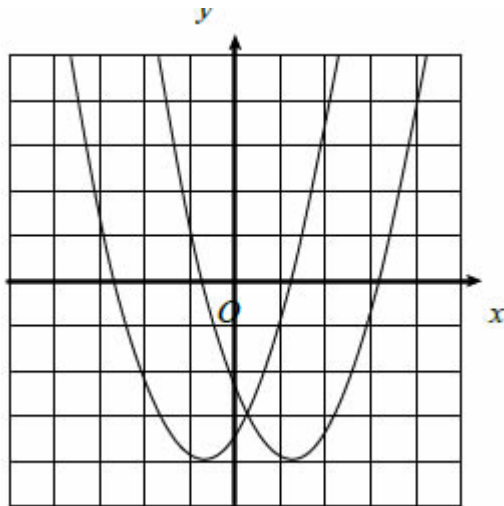
$\sin x + 90$ with < 4 correct points and incorrect graph

B0

[4]

Q5.

(a) Given graph translated by $\begin{pmatrix} 2 \\ 0 \end{pmatrix}$



Graph must pass through the 5 integer points (± 2 mm)

B1

(b) $-3(-x)^2 + 4(-x) - 5$
 or $-3x^2 - 4x - 5$
 oe

M1

$y = -3x^2 - 4x - 5$
 Must have $y =$

A1

Additional Guidance

$y = -(3x^2 + 4x + 5)$

M1 A1

[3]

Q6.

(a) Correct sketch
B1 for one correct step

B2

(b) Correct sketch
B1 for one correct step

B2

[4]

Q7.

$y = -x^2 + 5x - 2$

B1

[1]

Q8.

$y = (x - 2)^2$

