

Mark schemes

Q1.

(a) $(180, 0)$

B1

Additional Guidance

Condone degrees symbol on 180

Condone $(\pi, 0)$

B1

(b) $(-270, 1)$

B1

Additional Guidance

Condone degrees symbol on 270

Condone $(\frac{-3\pi}{2}, 1)$

B1

[2]

Q2.

(a) 2

B1

(b) 170

B1

[2]

Q3.

1.5

B1

[1]

Q4.

(a) $y = \tan x$

B1

(b) $y = 2^x$

B1

[2]

Q5.

(a) 120

B1

(b) 240 or 300

Either value

B1

[2]

Q6.

(a) C

Do not allow if more than one answer selected

B1

(b) A

Do not allow if more than one answer selected

B1

[2]

Q7.

Valid criticism

eg

(y =) 0.5 should be (y =) 1

y = 0.5 should be when x = 1

When x = 0 y = 1

0.5 is incorrect

Crosses y axis in wrong place

Graph should start at 1

$0.5^0 = 1$

B1

Additional Guidance

Do not accept statements which are contradictory

He does not have a scale on the x axis

B0

It does not pass through zero

B0

The line should meet the x axis

B0

[1]

Q8.

60 and 300

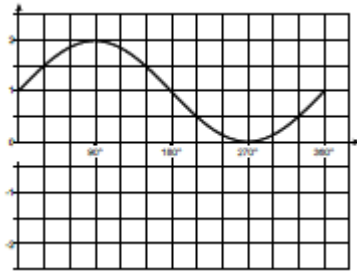
Either order

B1

[1]

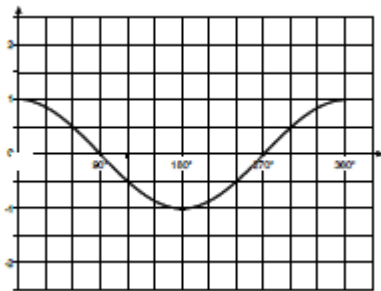
Q9.

(a) Fully correct graph



B1

(b) Fully correct graph



B1

[2]

Q10.

(a) 6

B1

(b) At least 8 of the 11 given points plotted correctly ($\pm \frac{1}{2}$ square)

M1

Smooth curve passing through (± 1 square) all 11 given points
Ignore the point at $t = 12$ even if incorrect

A1

(c) Smallest t value for $d = 9$ attempted using their graph
 (= approx 2.5)

eg horizontal line drawn from $(0, 9)$ to first point of intersection with their graph or mark on t -axis corresponding to first time when $d = 9$

M1

12.00 + their 2.5 written as a time of day
 oe

ft their t value ($\pm \frac{1}{2}$ square)

SC1 M0 but final answer follows through from their graph

A1ft

(d) Largest t value for $d = 9$ attempted using their graph (= approx 9.5)

eg horizontal line drawn from (0, 9) to second point of intersection with their graph or mark on t-axis corresponding to second time when $d = 9$

M1

Their $9.5 - 4.25 (= 5.25)$
Condone their $9.5 - 4.15$

M1Dep

5 h 15 min

ft their t value ($\pm \frac{1}{2}$ square) but do not follow through from use of 4.15

SC2 M0 but final answer follows through from their graph

A1ft

[8]