

S8

Space exam review

- 1 a** Find the value of x given that $\tan x = \sin 53^\circ + \cos 39^\circ$ and $0^\circ \leq x \leq 90^\circ$

.....

(1)

- b** Write down the maximum value of $2 \cos x^\circ$

.....

(1)

- c** Write down the minimum value of $100 - 20 \sin x^\circ$

.....

(1)

(Total 3 marks)

2
$$y = \sqrt{\frac{r + t \sin x^\circ}{r - t \sin x^\circ}}$$

$r = 8.8$

$t = 7.2$

$x = 40$

Calculate the value of y . Give your answer correct to 3 significant figures.

$y =$

(Total 3 marks)

- 3** Use your calculator to work out the value of

$$\frac{5 \cos 23^\circ - \sin 18^\circ}{1.36}$$

Write down all the figures on your calculator display.

.....

(Total 2 marks)

4 Diagram 1 is a sketch of part of the graph of $y = \sin x^\circ$.

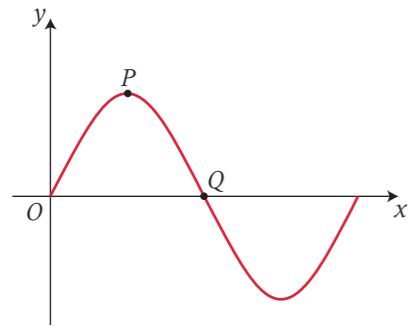


Diagram 1

a Write down the coordinates of

i P,

(..... ,)

ii Q.

(..... ,)

(2)

Diagram 2 is a sketch of part of the graph of $y = 3 \cos 2x^\circ$.

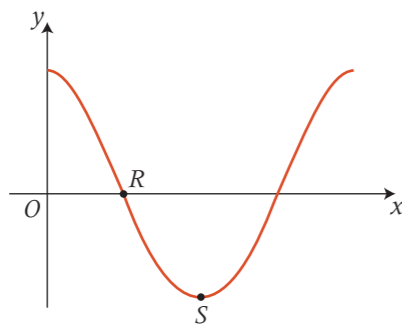


Diagram 2

a Write down the coordinates of

i R,

(..... ,)

ii S.

(..... ,)

(2)

(Total 4 marks)

5 The depth, D metres, of the water at the end of a jetty in the afternoon can be modelled by this formula

$$D = 5.5 + A \sin 30(t - k)^\circ$$

where

t hours is the number of hours after midday,
 A and k are constants.

Yesterday the low tide was at 3 p.m.
 The depth of water at low tide was 3.5 m.

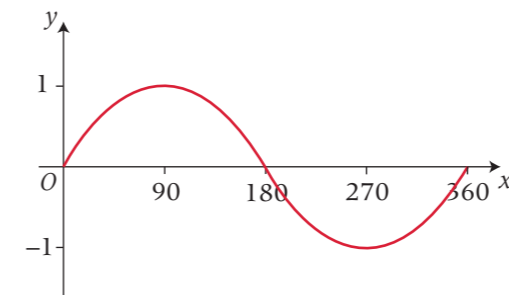
Find the value of A and k .

$A = \dots\dots\dots$

$k = \dots\dots\dots$

(Total 4 marks)

6 Here is a sketch of the curve $y = \sin x^\circ$ for $0 \leq x \leq 360$.



a Given that $\sin 30^\circ = \frac{1}{2}$, write down the value of

i $\sin 150^\circ$

.....

ii $\sin 330^\circ$

.....

(2)

The graph of $y = \cos x^\circ$ for $0 \leq x \leq 360$ is drawn below.



b Use the graph to find estimates of the solutions, in the interval $0 \leq x \leq 360$, of the equation

i $\cos x^\circ = -0.4$

ii $4 \cos x^\circ = 3$

(4)

(Total 6 marks)