1.(a) Complete the table of values for $y=2^x$ (2)

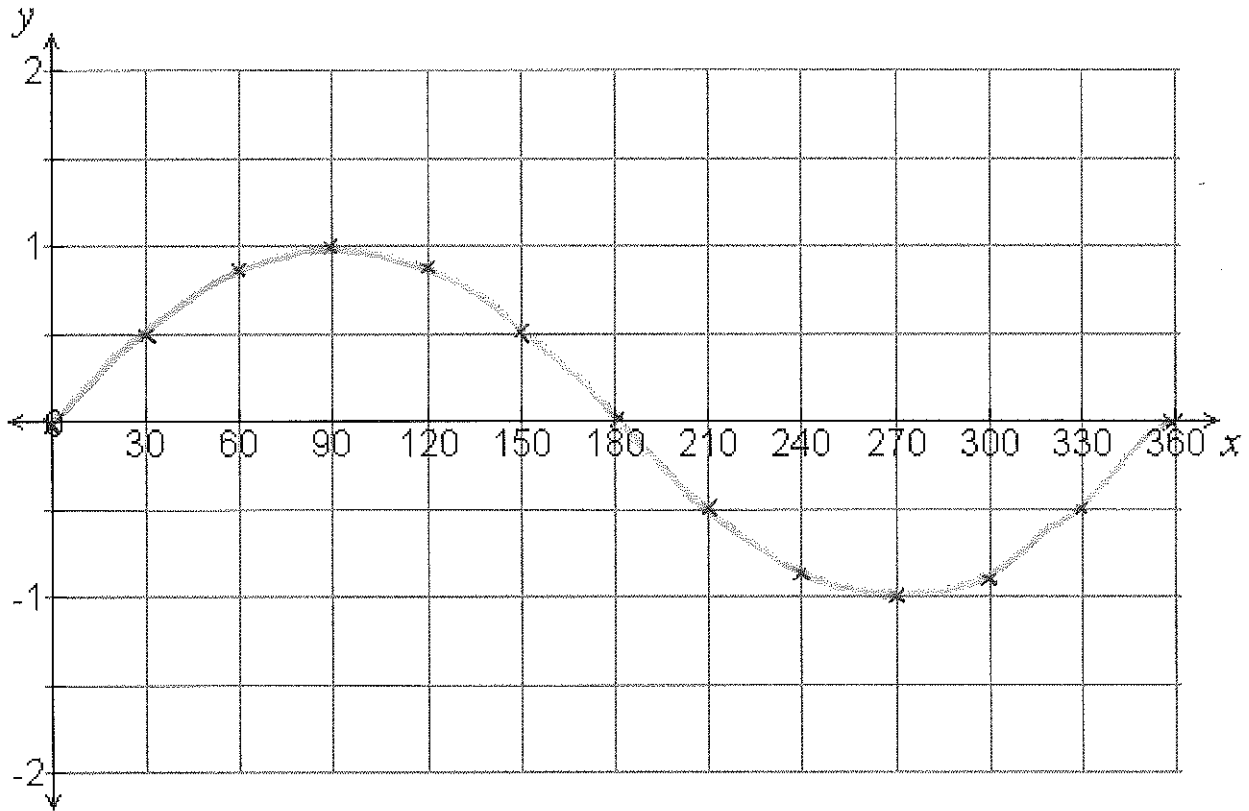| x	-3	-2	-1	0	1	2	3
y	⅛	¼	½	1	2	4	8

b) On the grid, draw the graph of $y=2^x$ (2)
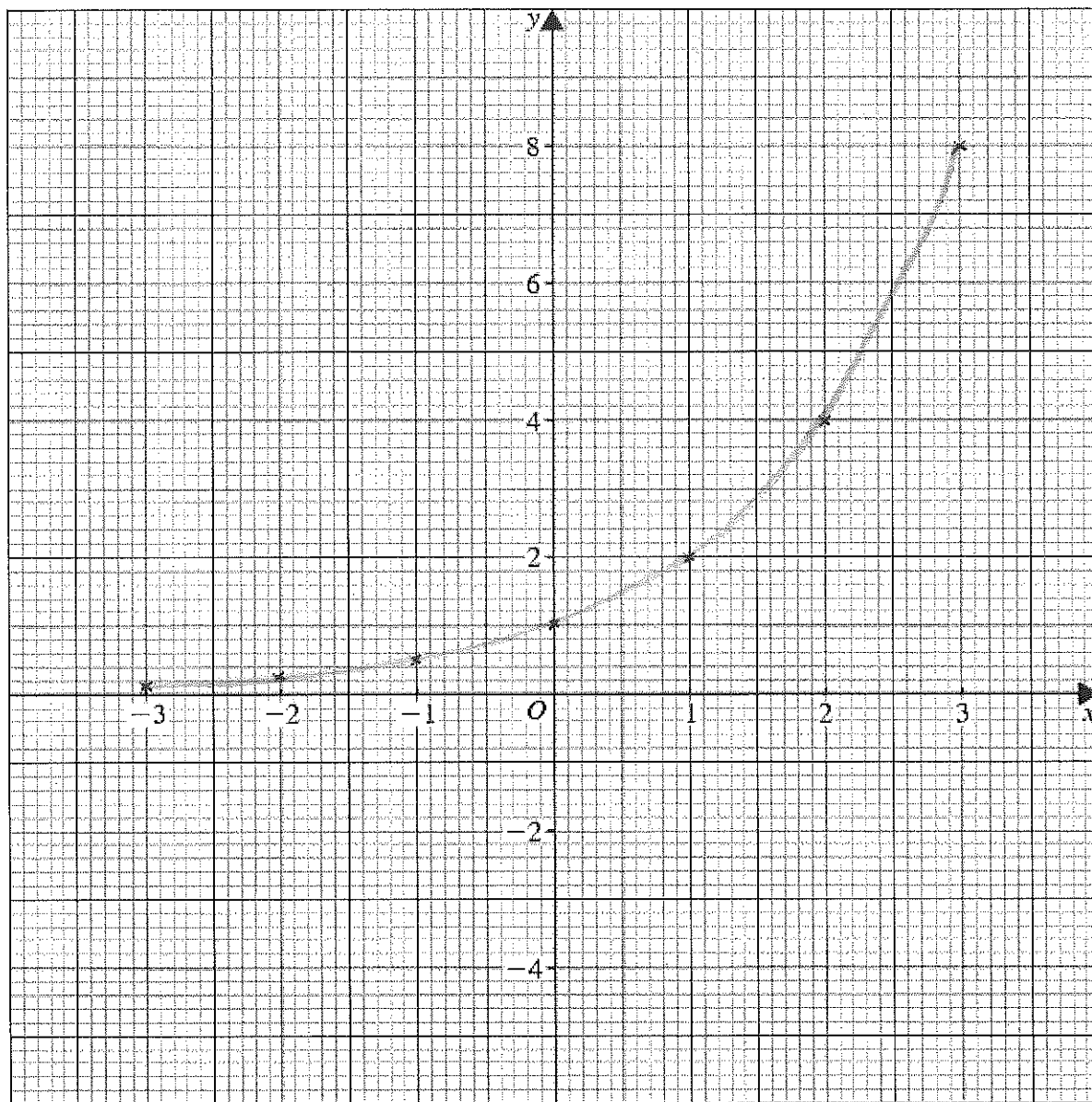
2.(a) Complete the table of values for $y = \sin(x)$

(2)

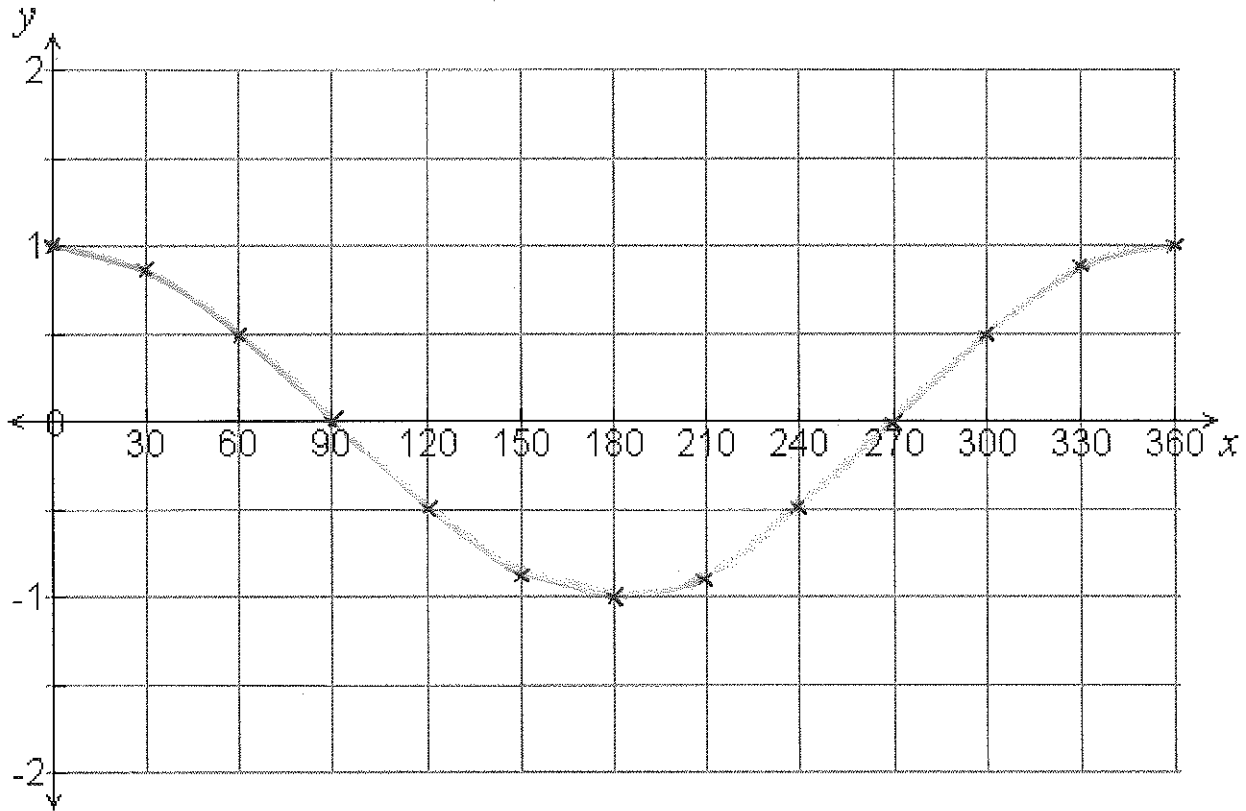| x	0	30	60	90	120	150	180	210	240	270	300	330	360
y	0	½	0.866	1	0.866	½	0	-½	-0.866	-1	-0.866	-½	0

b) On the grid, draw the graph of $y = \sin(x)$

(2)

3.(a) Complete the table of values for $y = \cos(x)$ (2)

x	0	30	60	90	120	150	180	210	240	270	300	330	360
y	1	0.866	½	0	-½	-0.866	-1	-0.866	-½	0	½	0.866	1

b) On the grid, draw the graph of $y = \cos(x)$ (2)

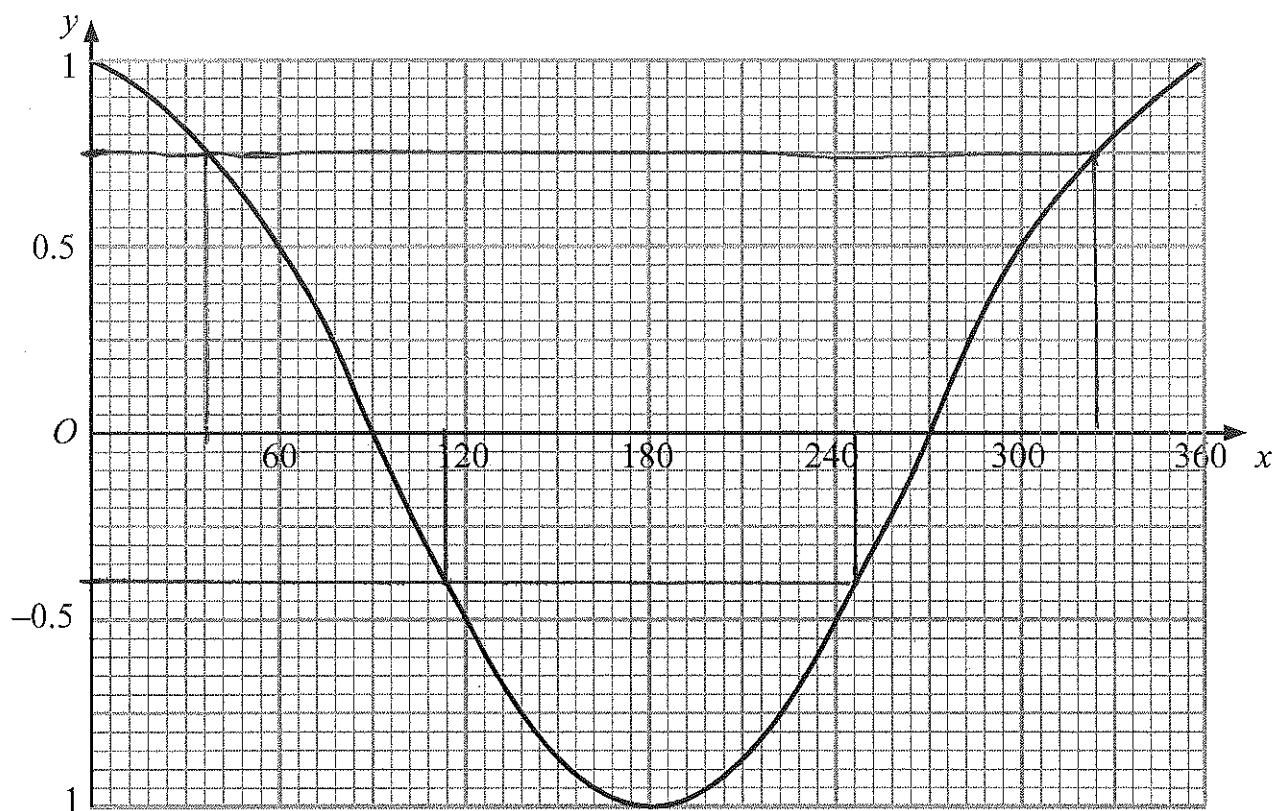4. Here is a sketch of the curve $y = \sin x^{o}$ for $0 \leqslant x \leqslant 360$
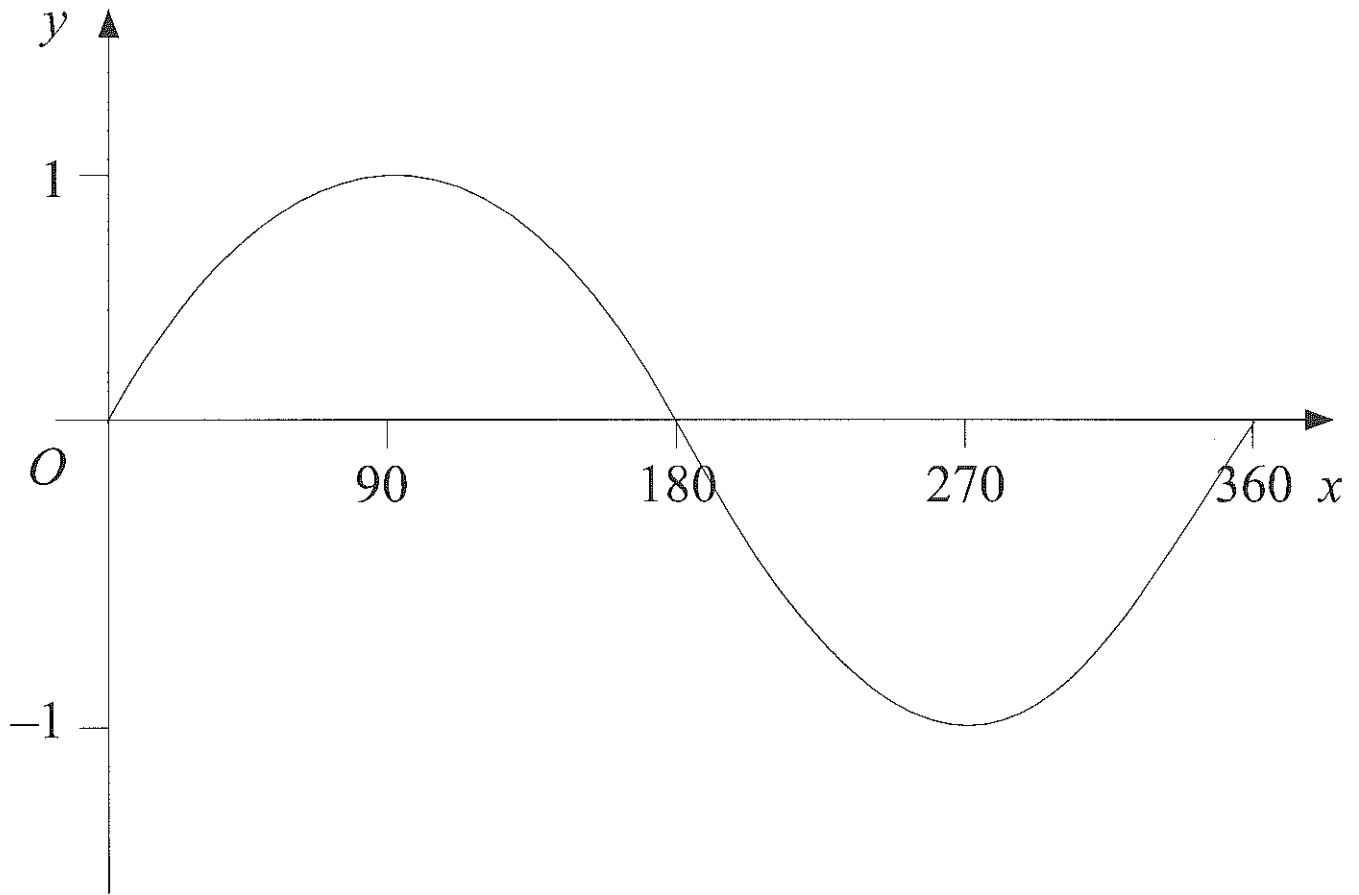
a) Given that $\sin 30° = \dfrac{1}{2}$, write down the value of:

i) $\sin 150°$

...... ½ ...... (1)

ii) $\sin 330°$

...... -½ ...... (1)

5. Here is a sketch of the curve $y = \cos x^o$ for $0 \leqslant x \leqslant 360$

a) Use the graph to find estimates of the solutions, in the interval $0 \leqslant x \leqslant 360$, of the equation:
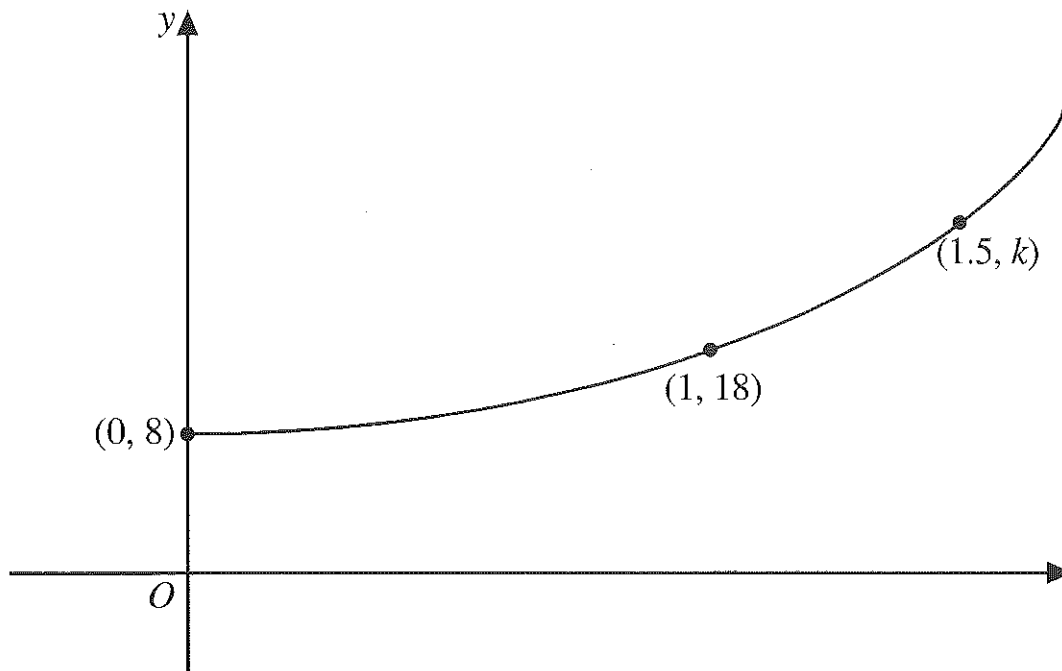
i) $\cos(x) = -0.4$

$114°$ and $246°$ .... (2)

ii) $4\cos(x) = 3$

$\cos(x) = 3/4$

$= 0.75$

$36°$ and $324°$ .... (2)

6.

This sketch shows part of the graph with equation $y = pq^x$, where p and q are constants.

The points with coordinates (0, 8), (1, 18) and (1.5, k) lie on the graph. Calculate the values of p, q and k.

$$y = pq^x$$

(0, 8)
x y

$$8 = pq^0$$
$$p = 8$$

(1, 18)
x y

$$y = 8q^x$$
$$18 = 8q^1$$
$$q = \frac{18}{8} = \frac{9}{4}$$

(1.5, k)
x y

$$y = 8\left(\frac{9}{4}\right)^x$$
$$k = 8\left(\frac{9}{4}\right)^{\frac{3}{2}}$$
$$= 8\left(\frac{27}{8}\right)$$
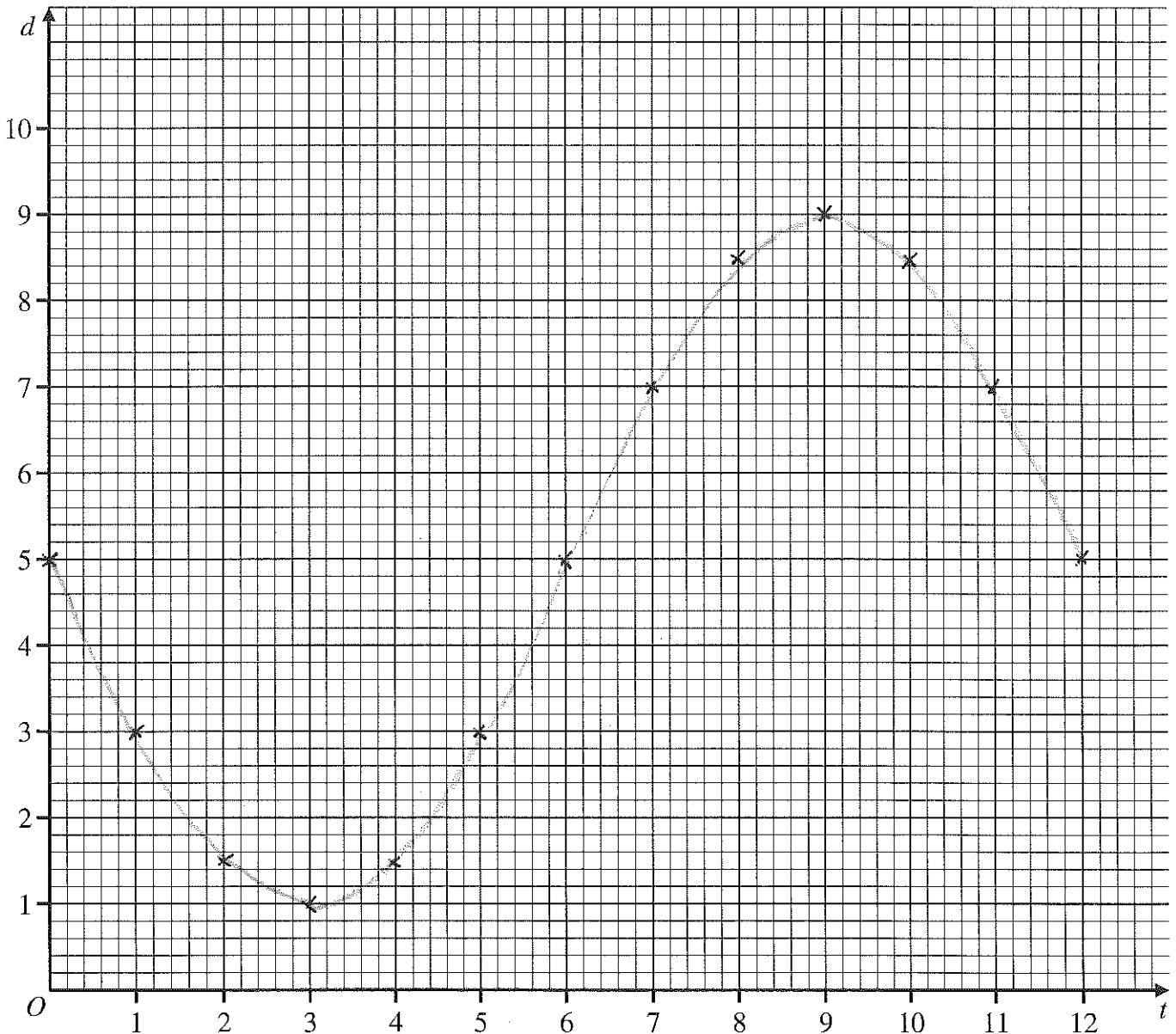$$k = 27$$

$p = 8$
$q = 9/4$
$k = 27$

(6)

7.

The depth of water, d metres, at the entrance to a harbour is given by the formula: $d = 5 - 4\sin(30t)$
where t is the time in hours after midnight on one day.

a) On the axes below, draw the graph of d against t for $0 \leqslant t \leqslant 12$.   (4)

t	0	1	2	3	4	5	6	7	8	9	10	11	12
d	5	3	1.54	1	1.54	3	5	7	8.46	9	8.46	7	5

(2dp)

b) Find the two values of t, where $0 \leqslant t \leqslant 24$, when the depth is least.

.......3....... and ....15....... (1)