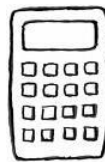


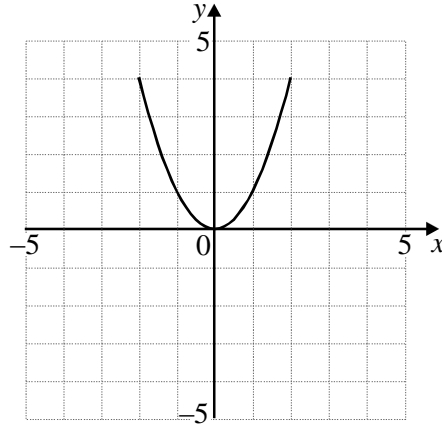
Name:

Teacher Assessment

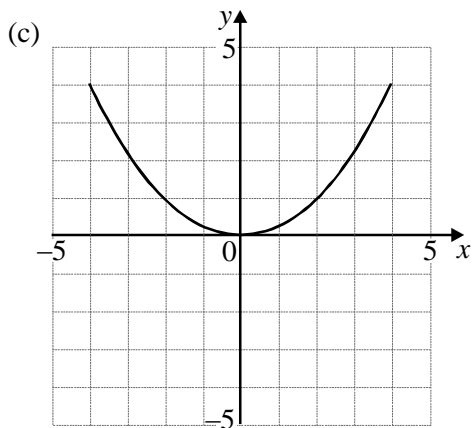
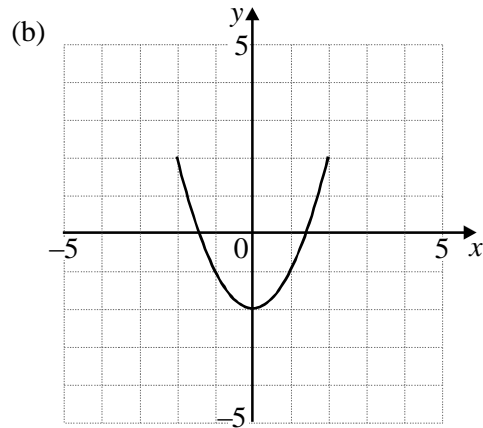
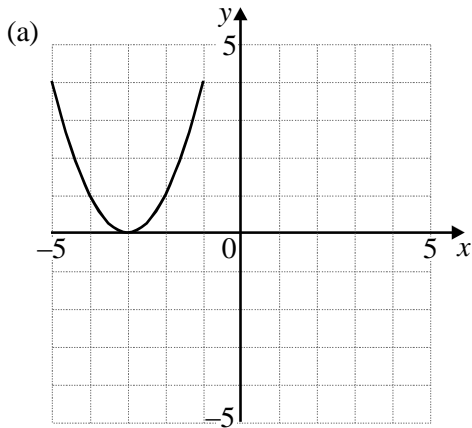


Section A **Transformations of Graphs** **Grade A***

1. The diagram shows the graph of $y = x^2$ for $-2 \leq x \leq 2$.



Each of the graphs below is a transformation of this graph.
Write down the equation of each graph.



Answer (a) $y = \dots\dots\dots$ (1)

Answer (b) $y = \dots\dots\dots$ (1)

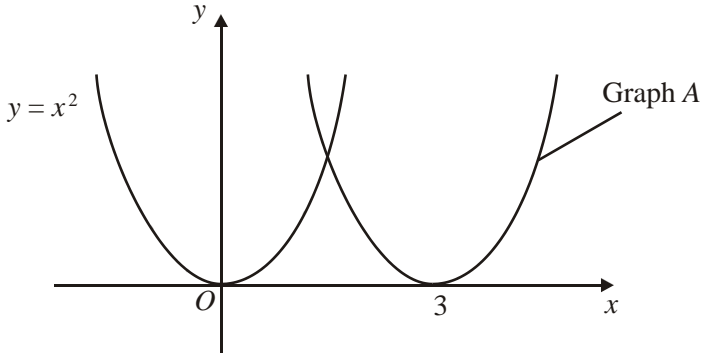
Answer (c) $y = \dots\dots\dots$ (1)

(Total 3 marks)

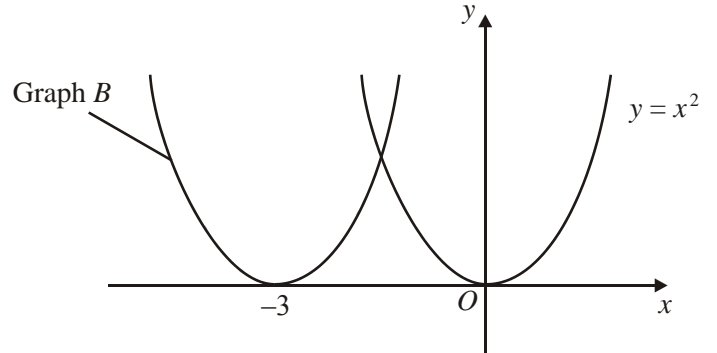
2. The diagrams, **which are not drawn to scale**, show the graph of $y = x^2$ and four other graphs A , B , C and D .

A , B , C and D represent four different transformations of $y = x^2$.

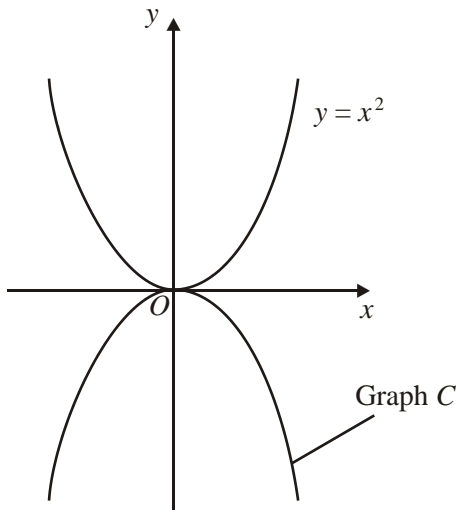
Find the equation of each of the graphs A , B , C and D .



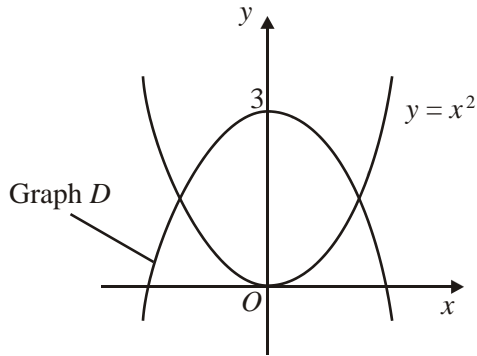
Answer Graph A is $y = \dots\dots\dots$



Answer Graph B is $y = \dots\dots\dots$



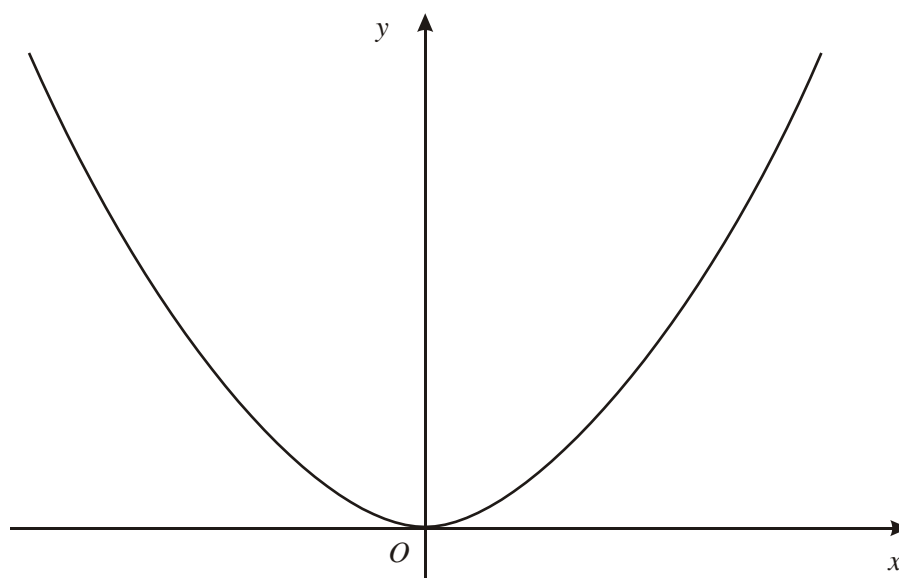
Answer Graph C is $y = \dots\dots\dots$



Answer Graph D is $y = \dots\dots\dots$

(Total 4 marks)

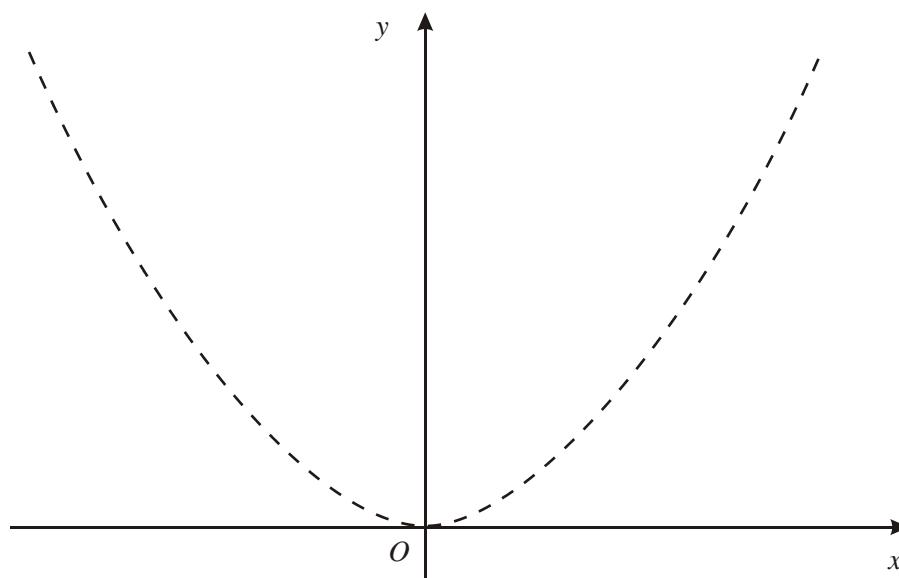
3. The sketch below is of the graph of $y = x^2$



On the axes provided, sketch the following graphs.

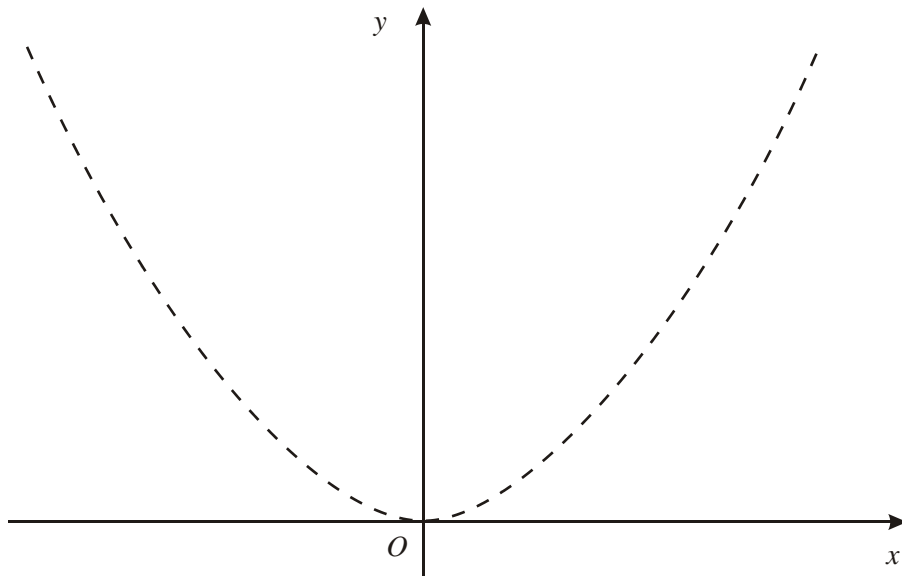
The graph of $y = x^2$ is shown dotted on each set of axes to act as a guide.

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



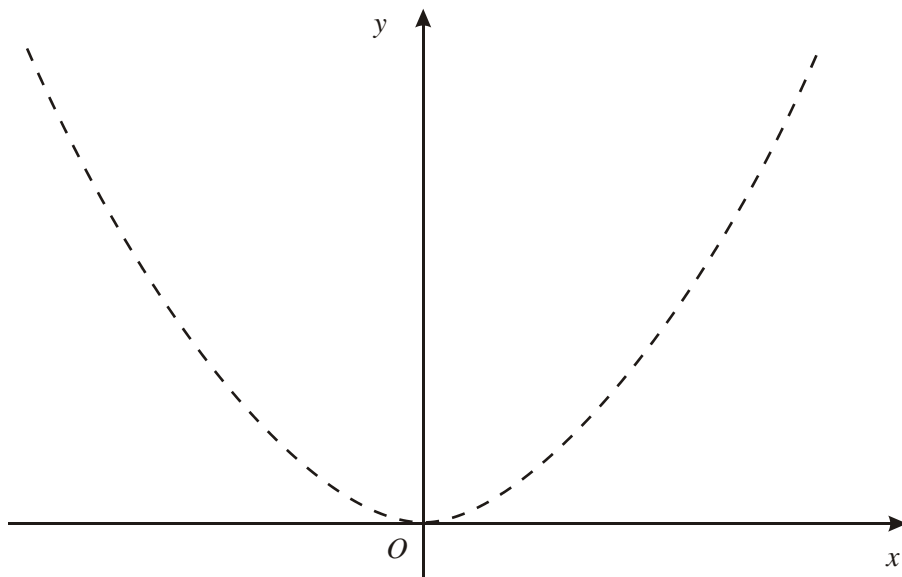
(1)

(b) $y = (x - 2)^2$



(1)

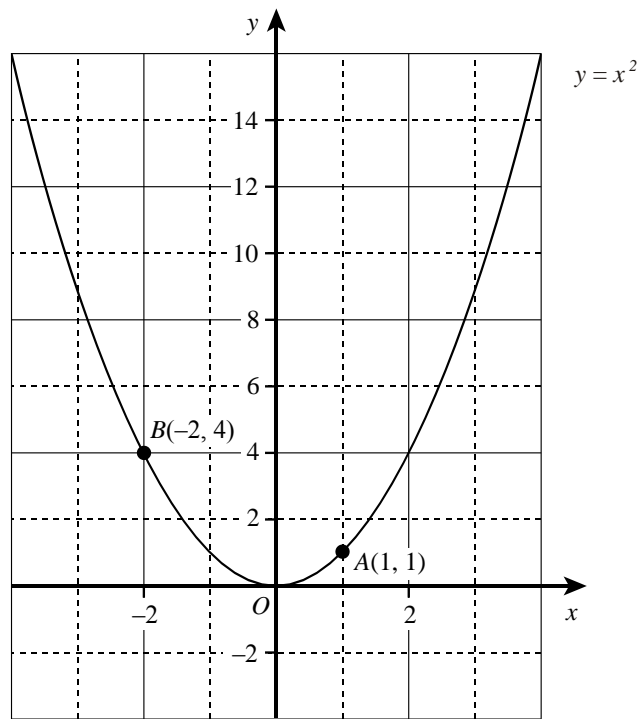
(c) $y = \frac{1}{2}x^2$



(1)

(Total 3 marks)

4. $A(1, 1)$ and $B(-2, 4)$ are two points on the graph of $y = x^2$



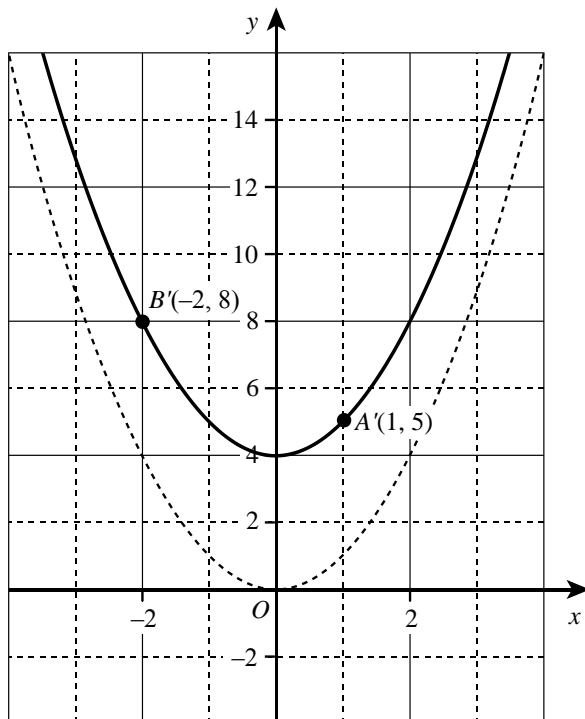
Here are three transformations of the graph $y = x^2$.

On each diagram the graph of $y = x^2$ is shown dotted.

The images A' and B' of A and B are shown.

Write down the equation of the transformed graph in each case.

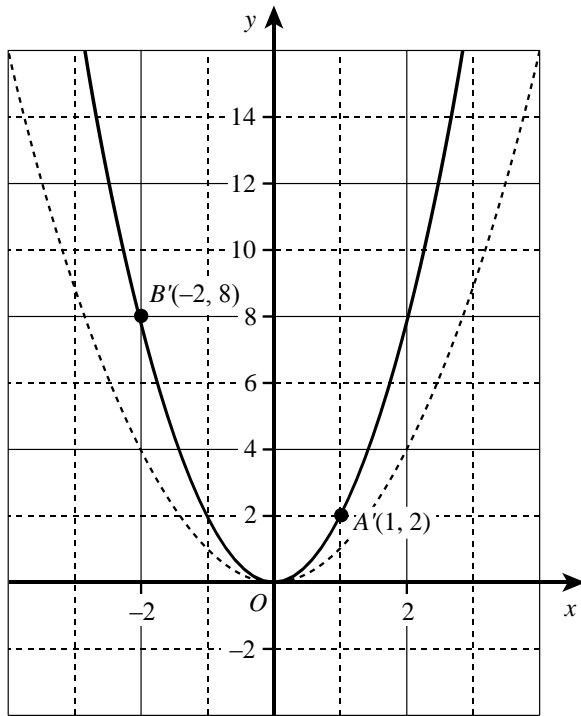
(a)



$y = \dots\dots\dots$

(1)

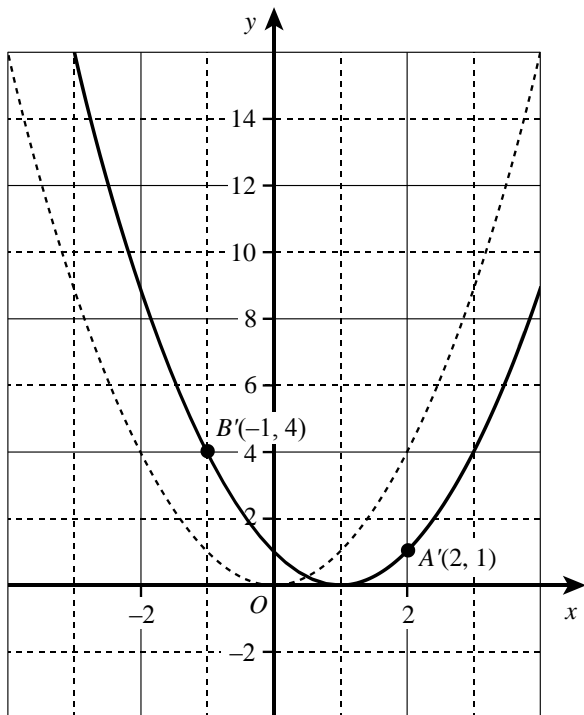
(b)



$y = \dots\dots\dots$

(1)

(c)

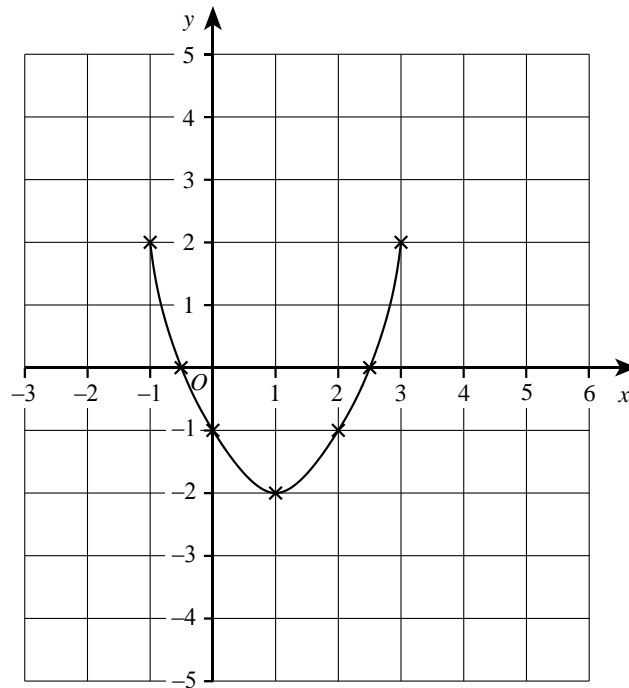


$y = \dots\dots\dots$

(1)

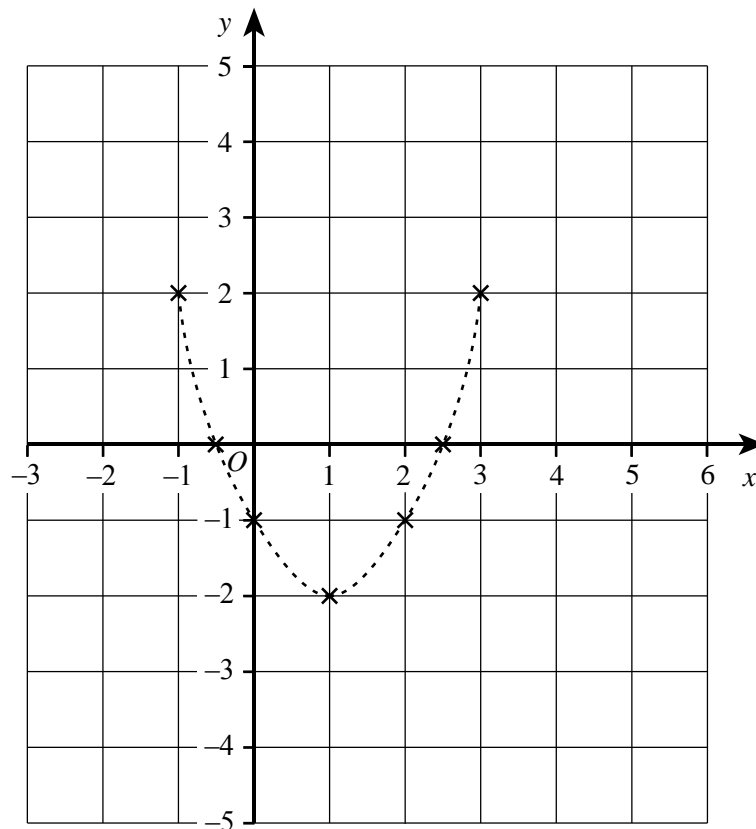
(Total 3 marks)

5. The diagram shows the graph of a function $y = f(x)$.



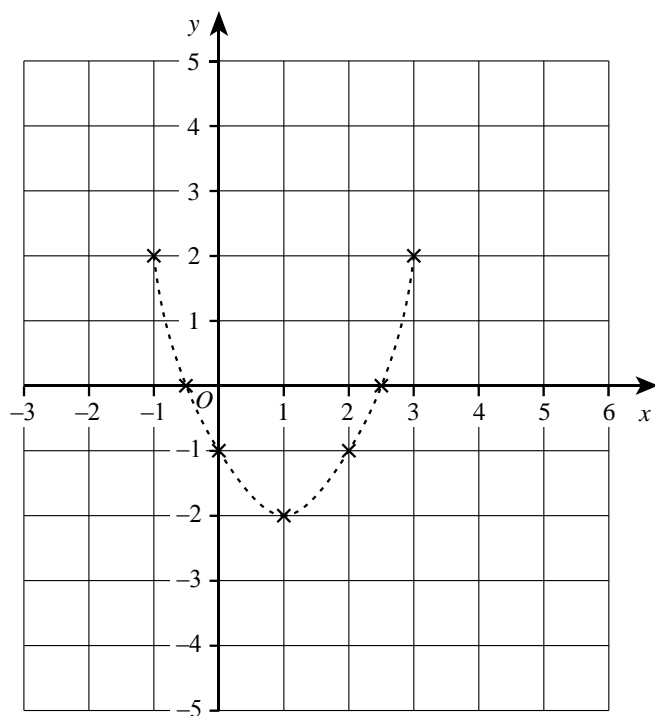
On the axes below sketch the graphs of each of these functions.
In each case, the graph of $y = f(x)$ is shown to help you.

(a) $y = f(x) + 2$



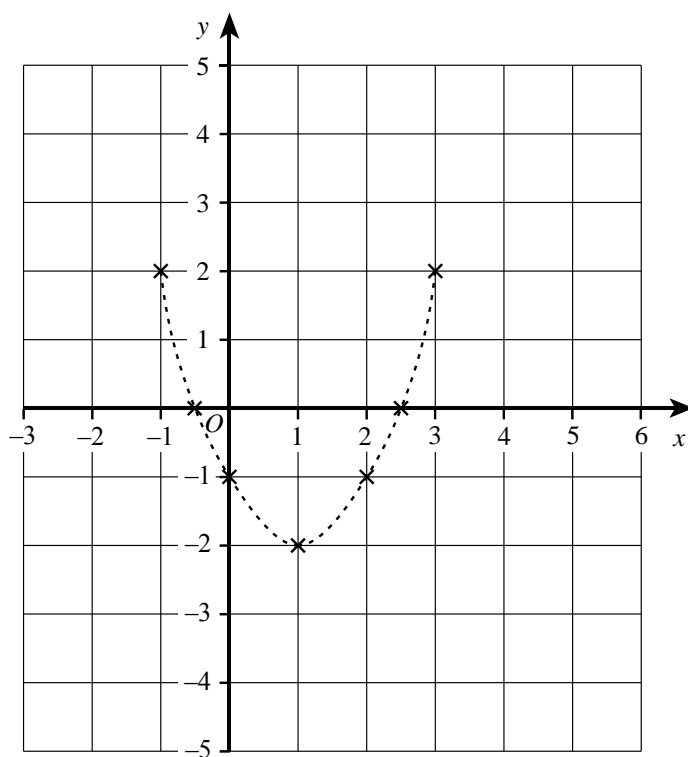
(1)

(b) $y=2f(x)$



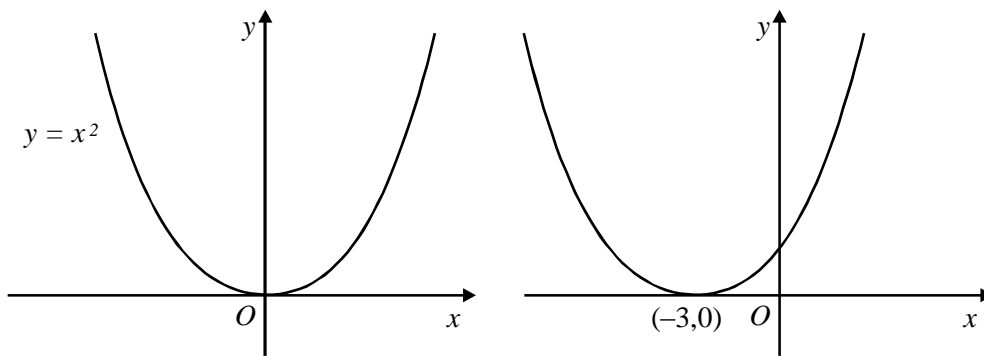
(1)

(c) $y=f(2x)$



(1)
(Total 3 marks)

6. (a) The graph $y = x^2$ is transformed as shown.



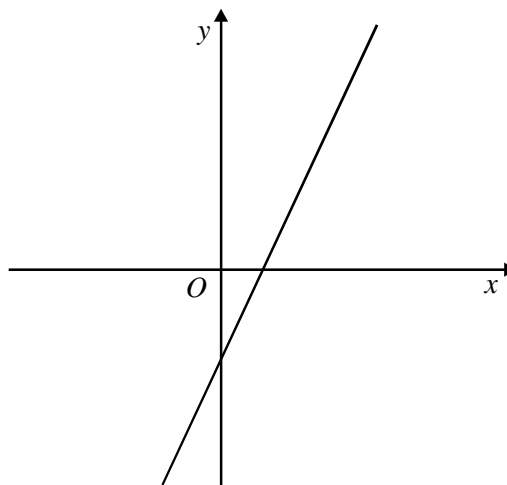
Not drawn accurately

Write down the equation of the transformed graph.

Answer $y = \dots\dots\dots$

(1)

- (b) The graph of $y = 3x - 2$ is sketched below.

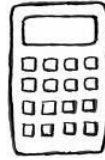


On the same axes, sketch the graph of $y = 2 - 3x$

(2)
(Total 3 marks)

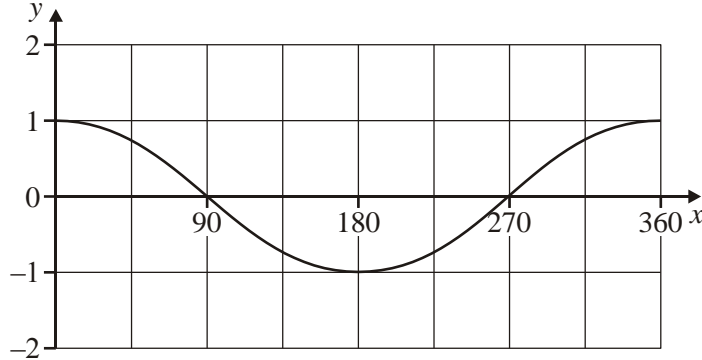
Success:

Target:



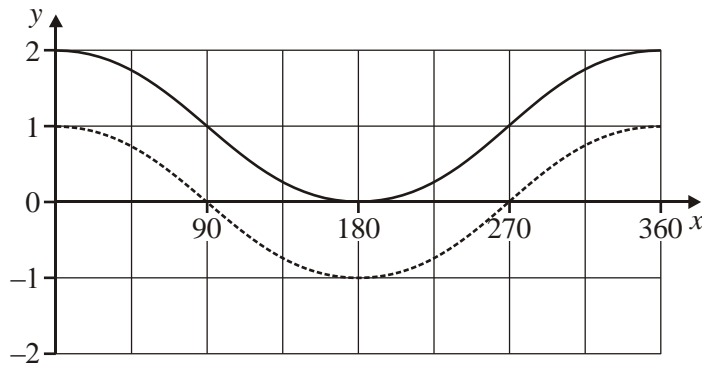
Section B Transformations of Trigonometric Graphs Grade A*

1. This is the graph of $y = \cos x$ for $0^\circ \leq x \leq 360^\circ$



Write the equation of each of the transformed graphs.
In each case the graph of $y = \cos x$ is shown dotted to help you.

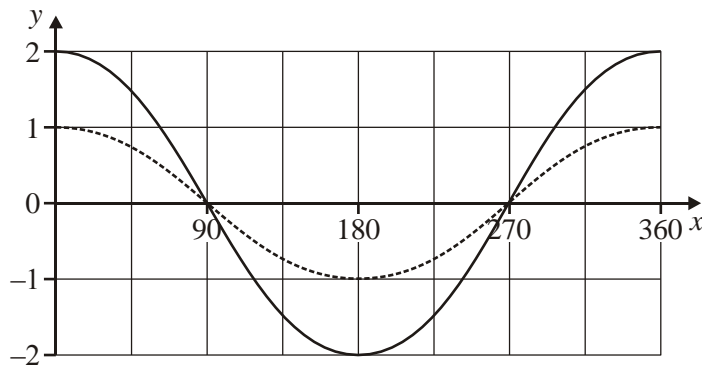
(a)



Equation $y = \dots\dots\dots$

(1)

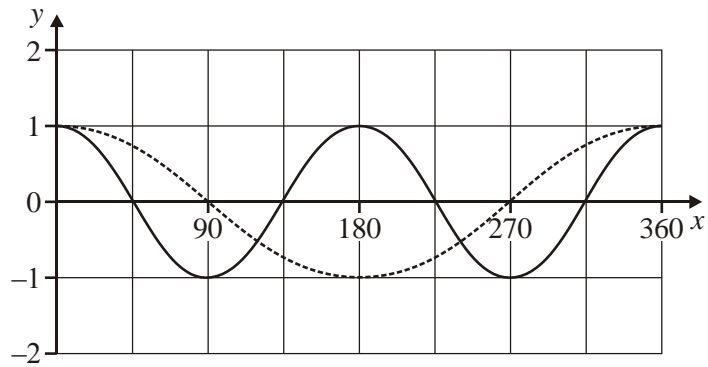
(b)



Equation $y = \dots\dots\dots$

(1)

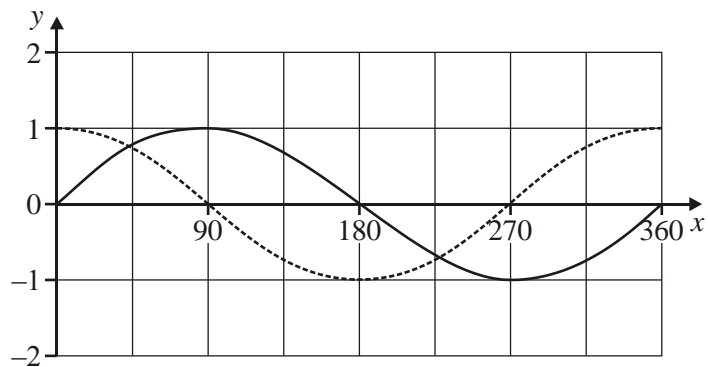
(c)



Equation $y = \dots\dots\dots$

(1)

(d)

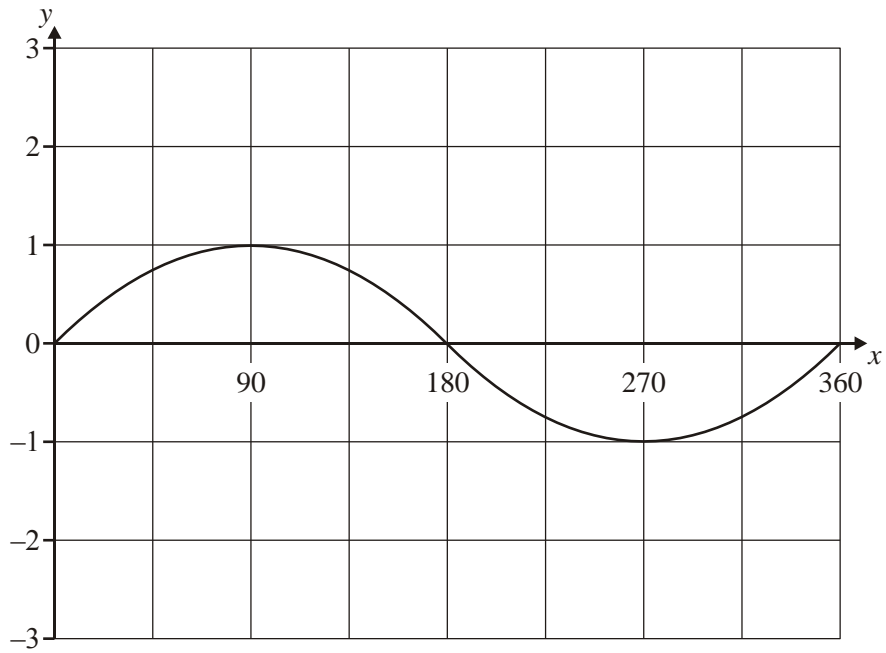


Equation $y = \dots\dots\dots$

(1)

(Total 4 marks)

2. This is the graph of $y = \sin x$ for $0^\circ \leq x \leq 360^\circ$



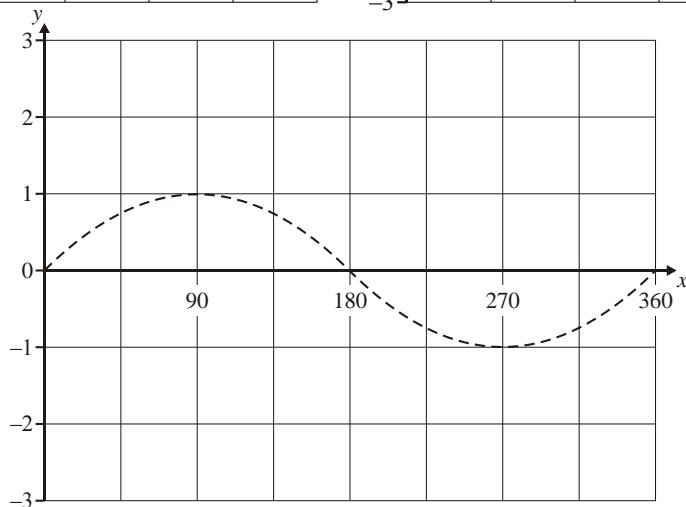
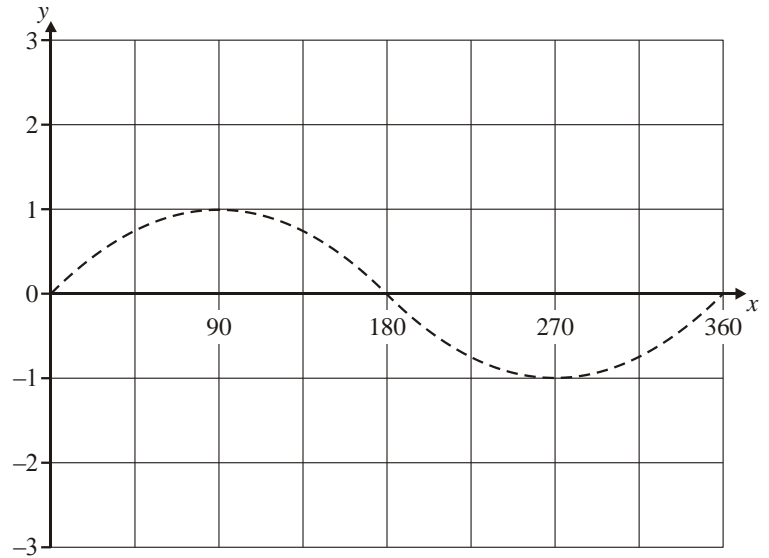
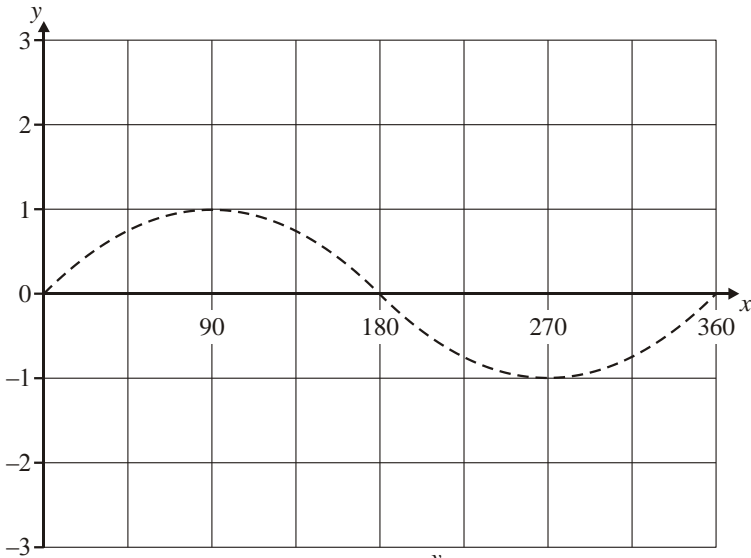
Draw the graphs indicated for $0^\circ \leq x \leq 360^\circ$

In each case the graph of $y = \sin x$ is shown to help you.

(a) $y = 2 \sin x$ (1)

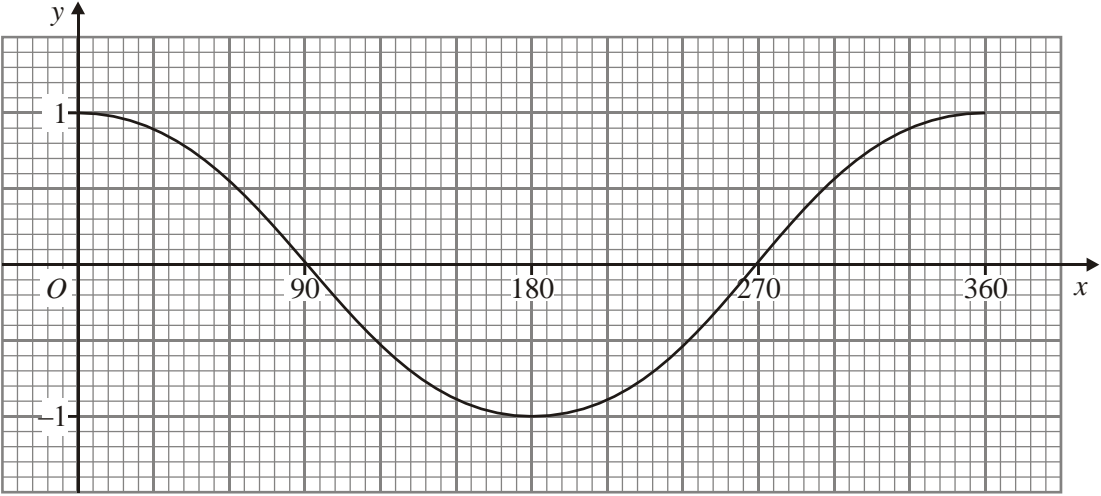
(b) $y = -\sin x$ (1)

(c) $y = \sin 2x$ (1)

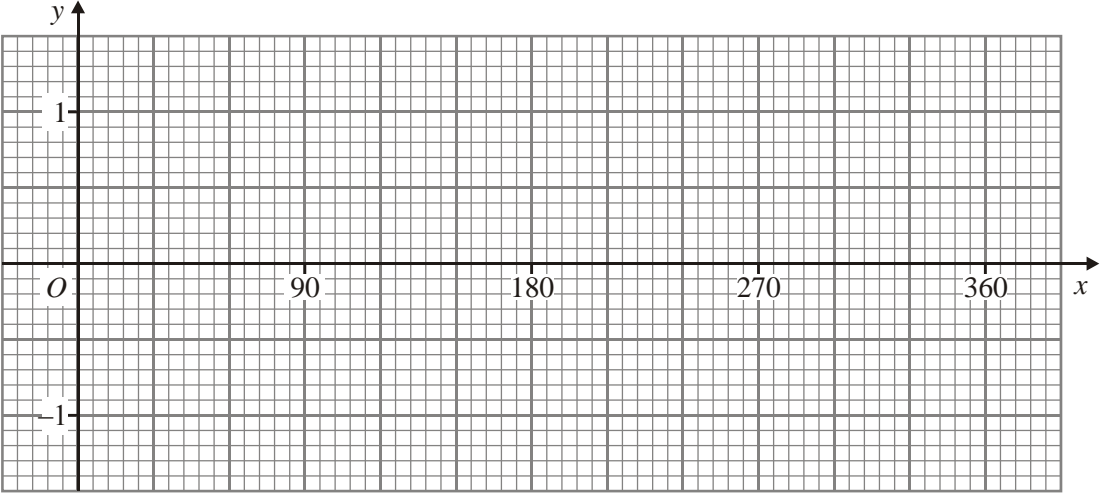


(Total 3 marks)

3. This is the graph of $y = \cos x$ for $0^\circ \leq x \leq 360^\circ$

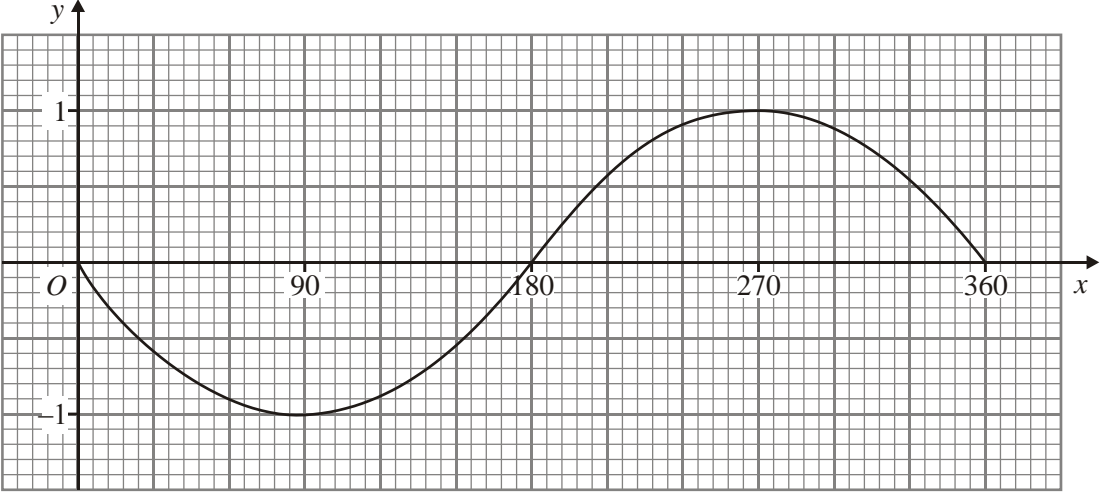


(a) On the axes below draw the graph of $y = \cos(x - 90)$ for $0^\circ \leq x \leq 360^\circ$



(2)

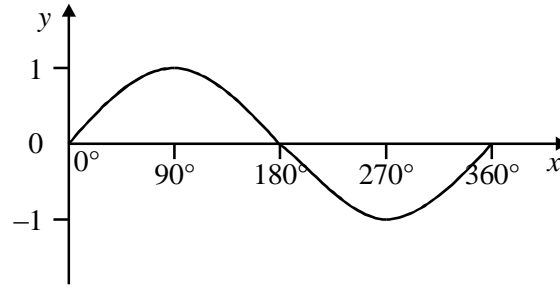
(b) Write down a possible equation of the following graph.



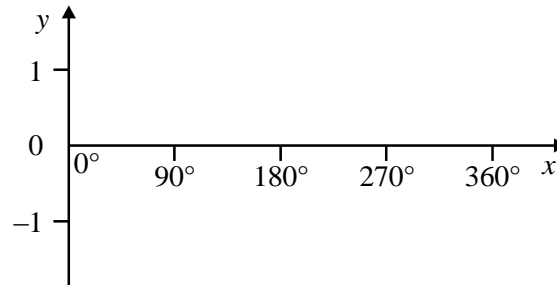
Answer

(1)
(Total 3 marks)

4. This is the graph of $y = \sin x$.

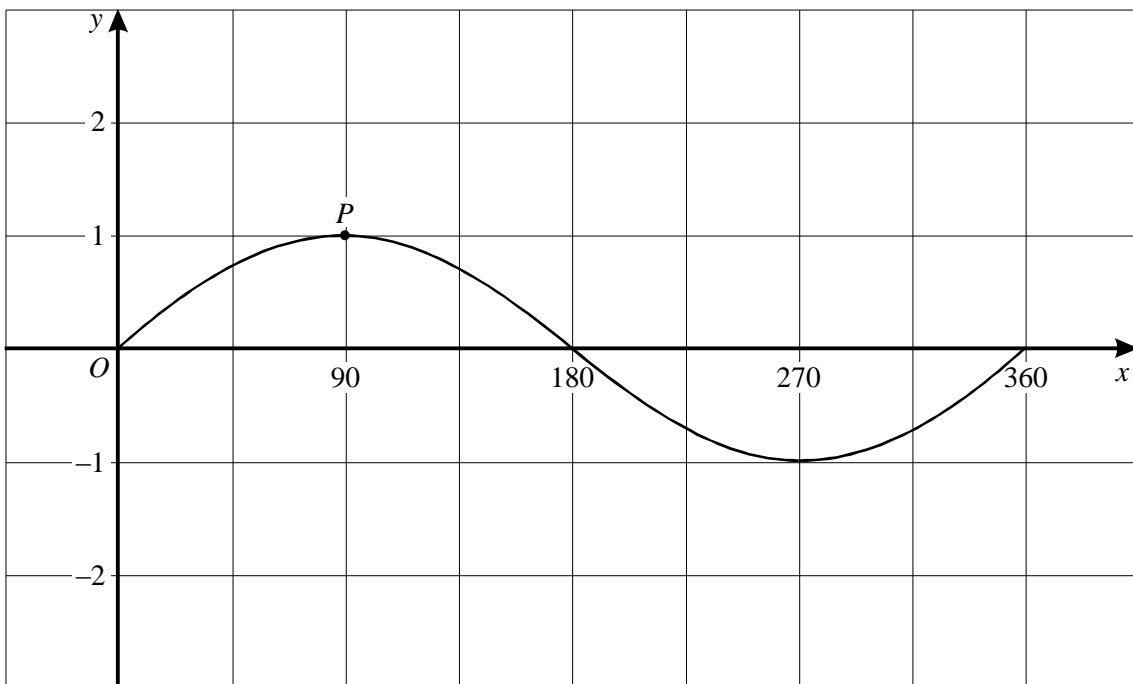


On the grid below, sketch the graph of $y = \sin(x - 90^\circ)$



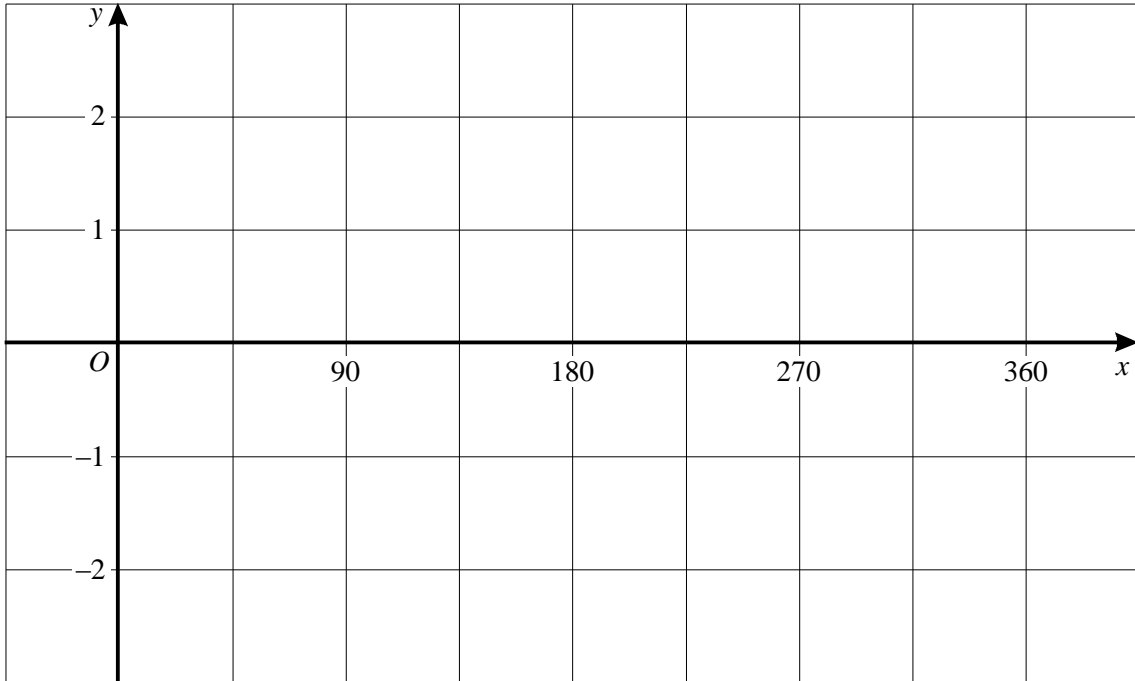
(Total 2 marks)

5. The graph of $y = \sin x$ for $0^\circ \leq x \leq 360^\circ$ is shown on the grid below. The point $P(90, 1)$ lies on the curve.



On both of the grids that follow, sketch the graph of the transformed function.
In both cases write down the coordinates of the transformed point P .

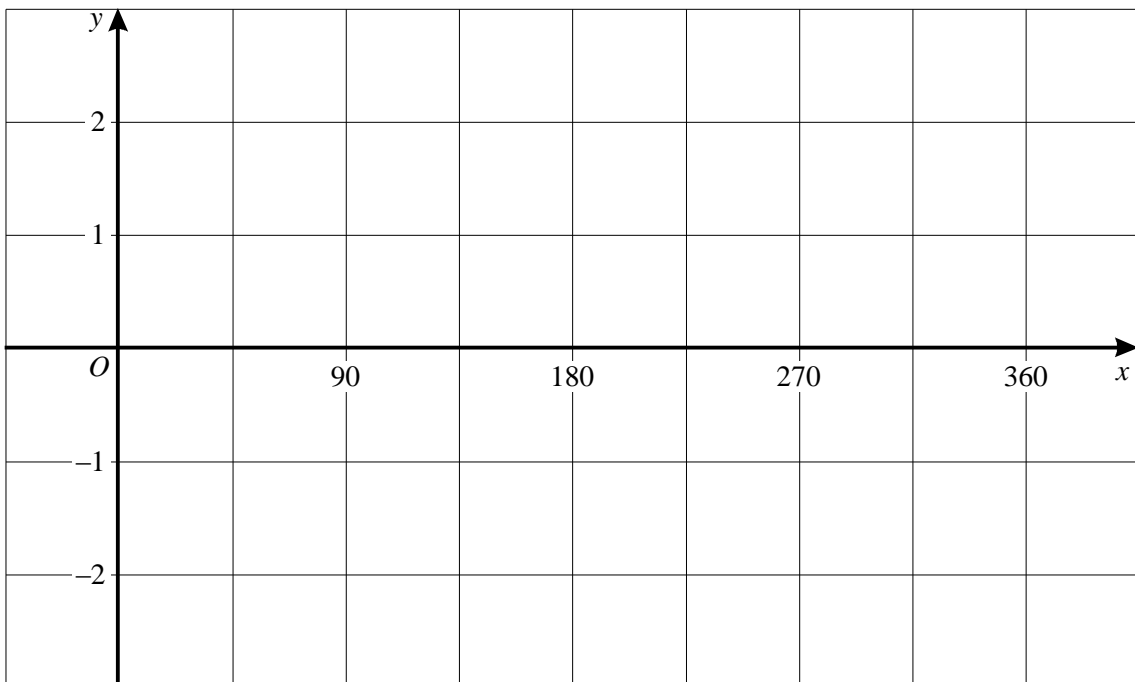
(a) $y = \sin(x - 45)$



P (.....,))

(2)

(b) $y = 2\sin x$



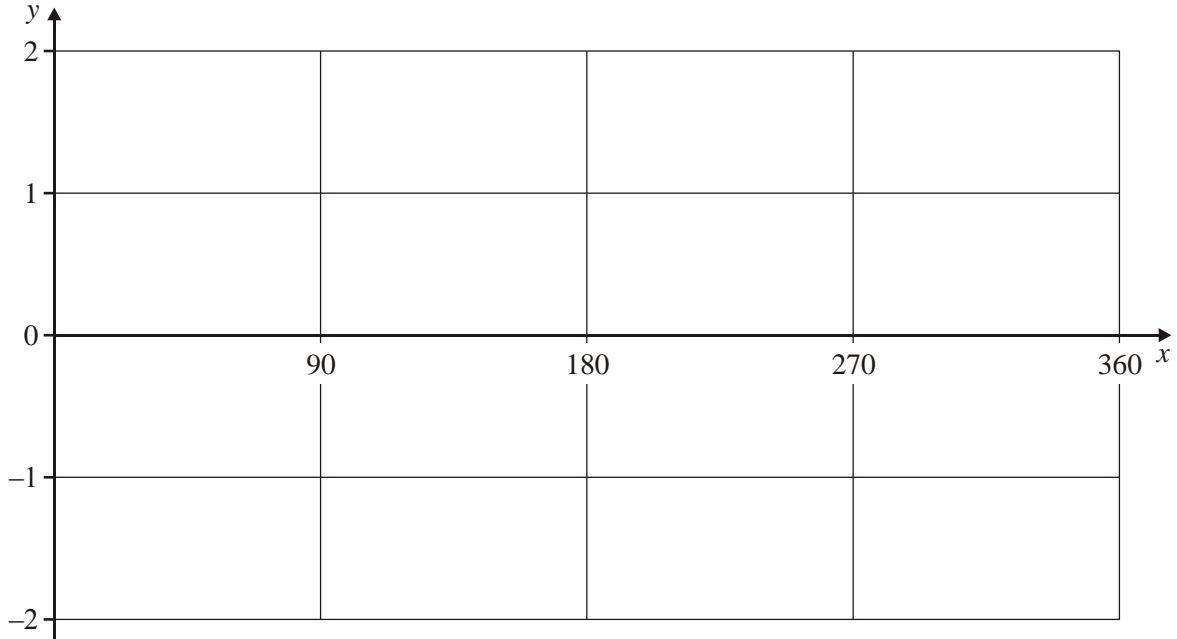
P (.....,))

(2)

(Total 4 marks)

6. You are given that $\sin 70^\circ = 0.9397$

(a) On the axes below sketch the graph of $y = \sin 2x$ for $0^\circ \leq x \leq 360^\circ$



(2)

(b) Hence write down the **four** solutions of the equation $\sin 2x = 0.9397$

.....

Answerdegrees

..... degrees

..... degrees

..... degrees

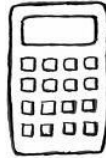
(3)

(Total 5 marks)

Success:

Target:

Teacher
Assessment



Section C

Shapes of Graphs

Grade A

1. Match three of these equations with the graphs shown below.

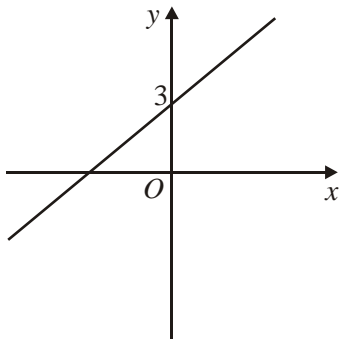
$$y = x + 3$$

$$y = 3x$$

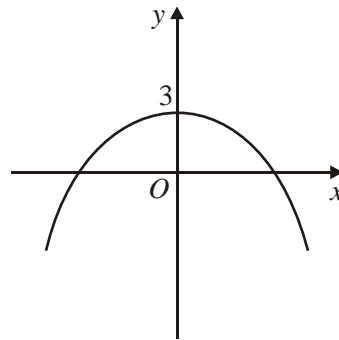
$$y = 3x^2$$

$$y = x^2 + 3$$

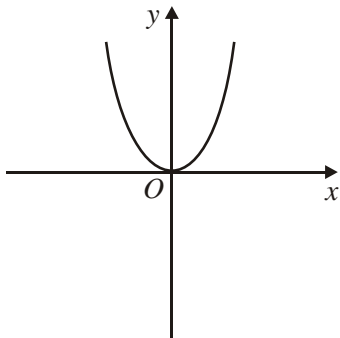
$$y = 3 - x^2$$



Answer $y = \dots\dots\dots$ (1)



Answer $y = \dots\dots\dots$ (1)



Answer $y = \dots\dots\dots$ (1)

(Total 3 marks)

2. Each of the graphs represents one of the following equations.

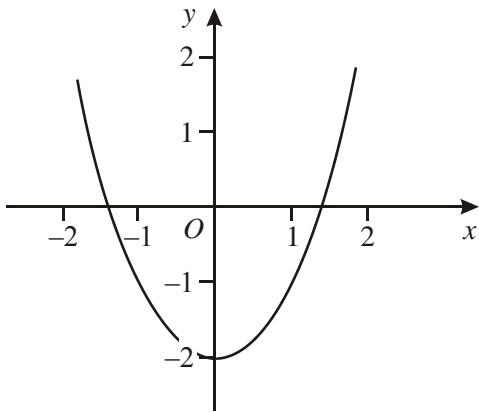
A $y = 3x + 4$

B $2x + 3y = 12$

C $y = x^2 - 2$

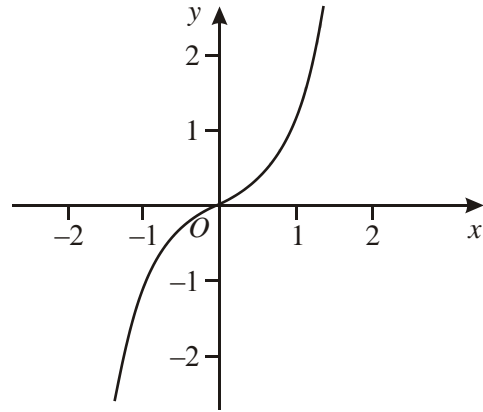
D $y = x^3$

Write down the letter of the equation represented by each graph



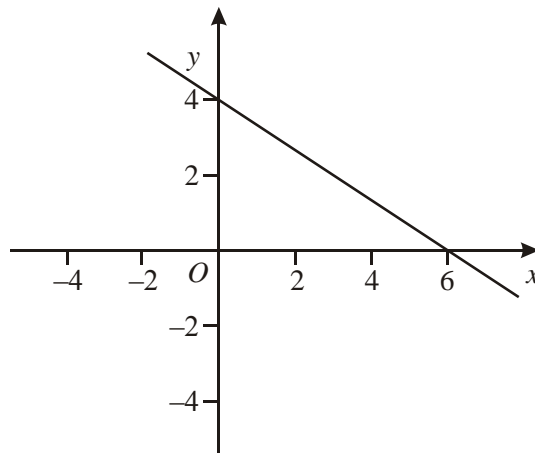
Equation

(1)



Equation

(1)

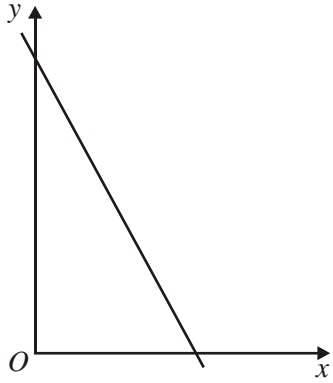


Equation

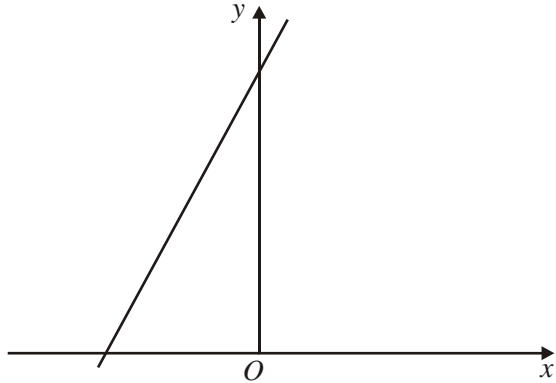
(1)

(Total 3 marks)

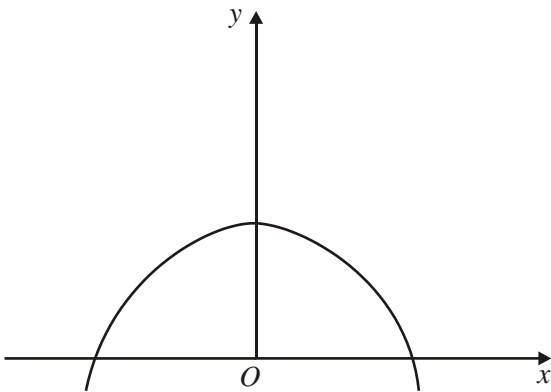
3. (a) Four graphs are sketched.



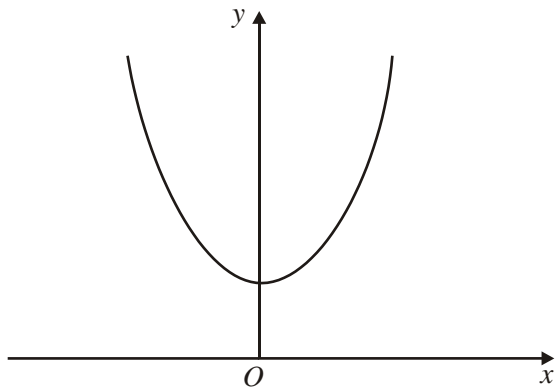
Graph A



Graph B



Graph C



Graph D

Complete the following statements.

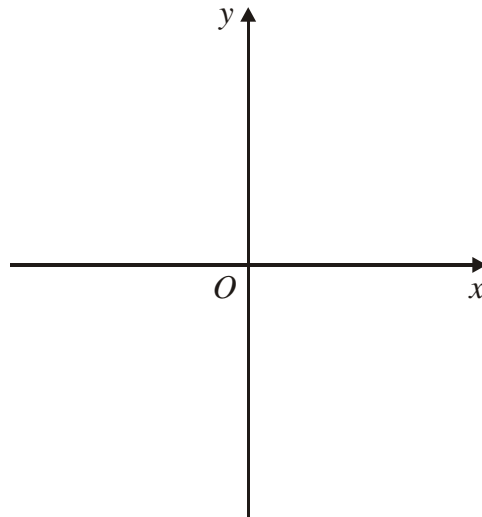
$y = 2x + 4$ matches graph

$y = x^2 + 4$ matches graph

$y + 2x = 4$ matches graph

(3)

(b) Sketch the graph of $y = x^3$ on the axes below.



(2)
(Total 5 marks)

4. Below are three graphs.

Match each graph with one of the following equations.

Equation A: $y = 3x - p$

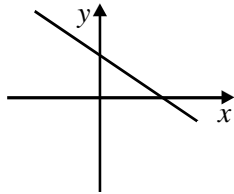
Equation B: $y = x^2 + p$

Equation C: $3x + 4y = p$

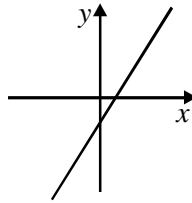
Equation D: $y = px^3$

In each case p is a **positive** number.

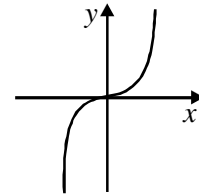
(i)



(ii)



(iii)



Answer Graph (i) Equation

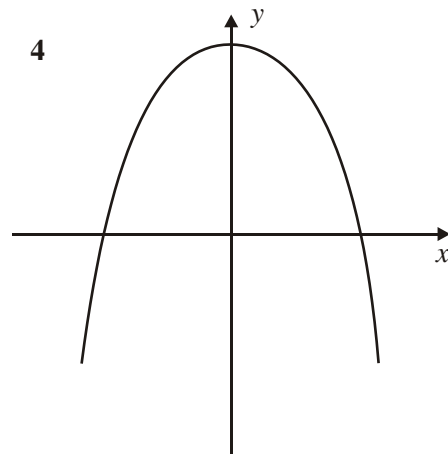
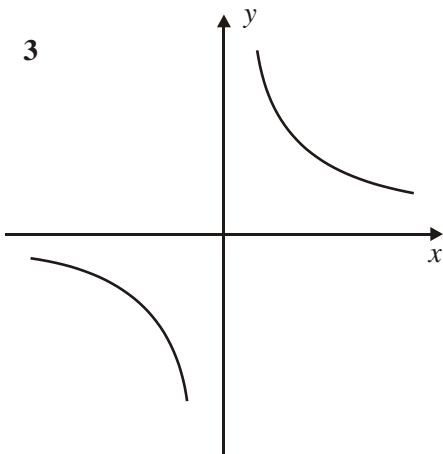
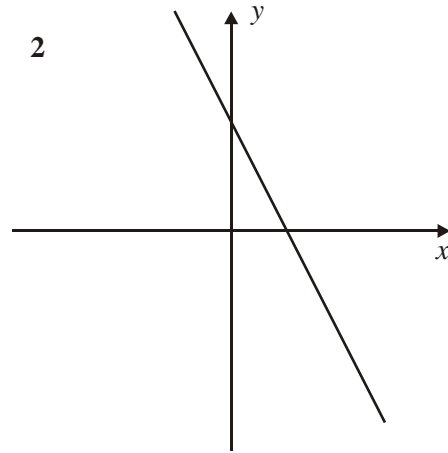
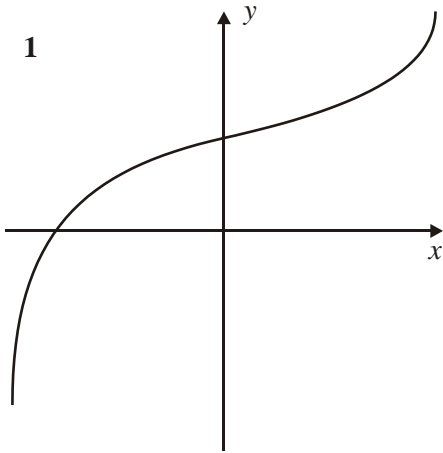
Graph (ii) Equation

Graph (iii) Equation

(Total 3 marks)

5. Match each of the sketch graphs to one of these equations.

A $y = 2 - 2x$ **B** $y = 2x + 2$ **C** $y = 3 - x^2$ **D** $y = x^3 + 4$ **E** $y = \frac{2}{x}$



Graph 1 represents equation

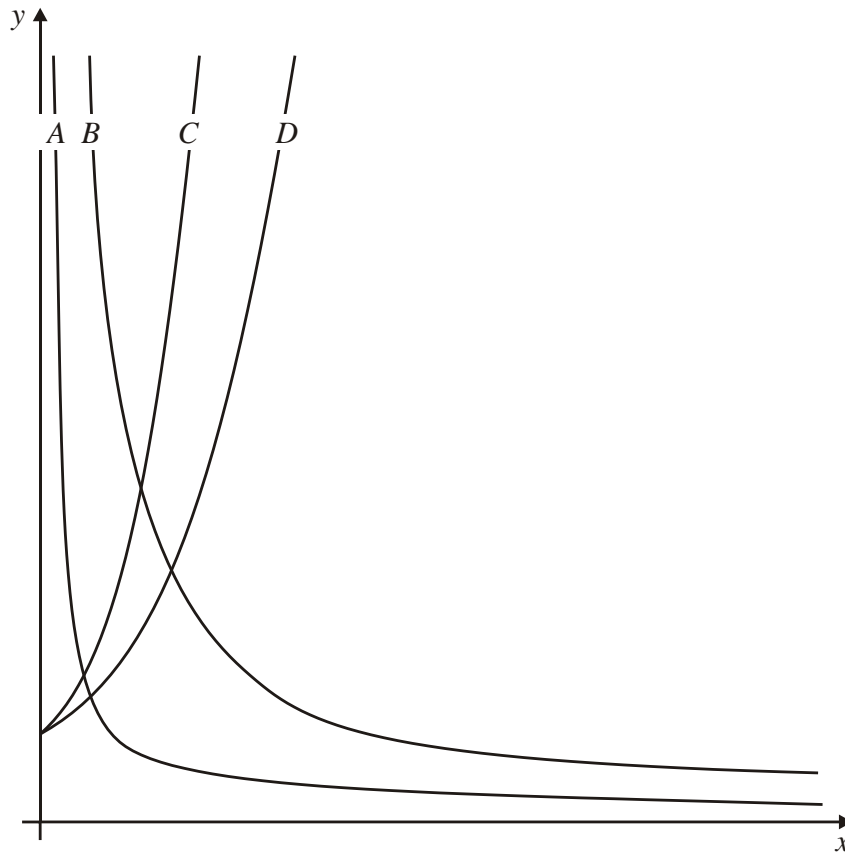
Graph 2 represents equation

Graph 3 represents equation

Graph 4 represents equation

(Total 4 marks)

6. The graph shows four curves A, B, C and D.
St Paul's Catholic School



Match each curve to its equation.

(a) $y = \frac{1}{x}$ is curve

(1)

(b) $y = 2^x$ is curve

(1)

(c) $y = 3^x$ is curve

(1)

(d) $y = \frac{4}{x}$ is curve

(1)

(Total 4 marks)

Success:

Target: