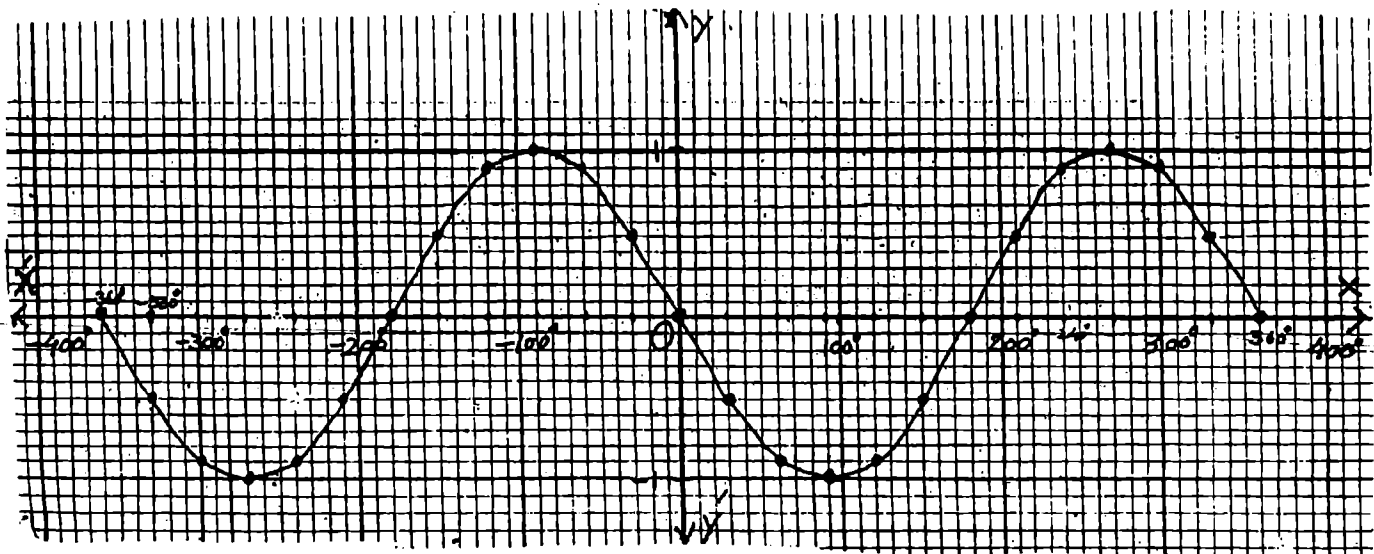


EXERCISE 11.2

1. i) $y = -\sin x$; $x \in [-2\pi, 2\pi]$

x	-360°	-330°	-300°	-270°	-240°	-210°	-180°	-150°	-120°	-90°	-60°	-30°	0°
y	0	-0.5	-0.9	-1	-0.9	-0.5	0	0.5	0.9	1	0.9	0.5	0
x	30°	60°	90°	120°	150°	180°	210°	240°	270°	300°	330°	360°	
y	-0.5	-0.9	-1	-0.9	-0.5	0	0.5	0.9	1	0.9	0.5	0	

Scale: One big square along x -axis = 100°
 One big square along y -axis = 1 unit.

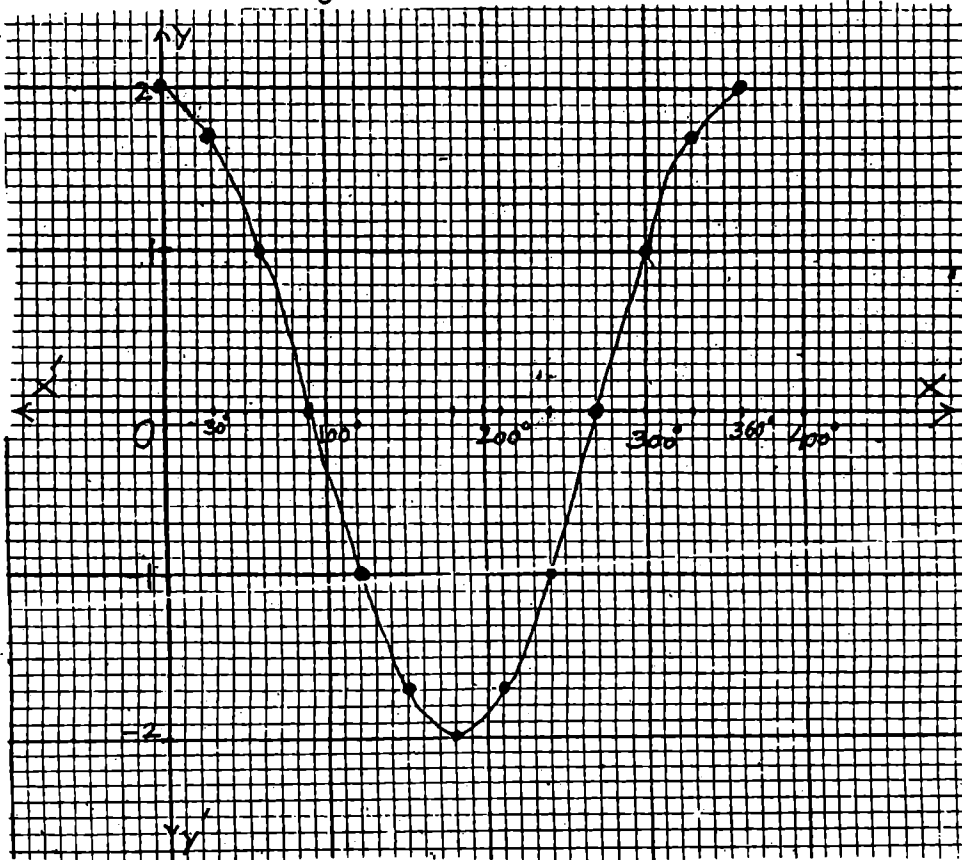


[6]

ii) $y = 2 \cos x$; $x \in [0, 2\pi]$

x	0°	30°	60°	90°	120°	150°	180°	210°	240°	270°	300°	330°	360°
y	2	1.7	1	0	-1	-1.7	-2	-1.7	-1	0	1	1.7	2

Scale : One big square along x -axis = 100°
 One big square along y -axis = 1 unit.



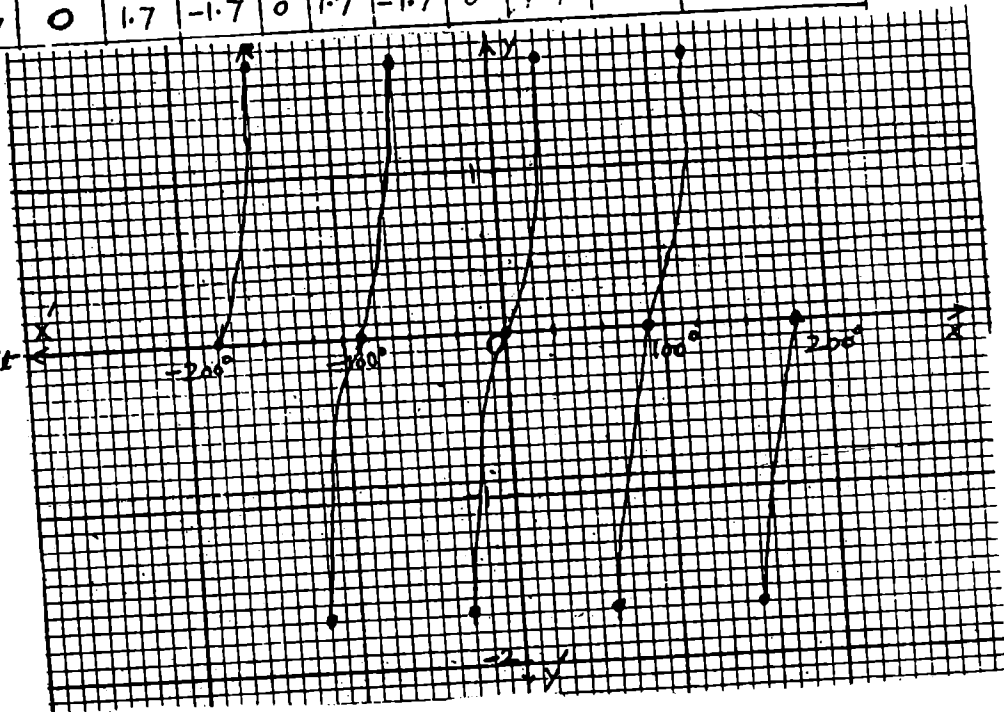
iii) $y = \tan 2x$; $x \in [-\pi, \pi]$

x	-180°	-150°	-120°	-90°	-60°	-30°	0°	30°	60°	90°	120°	150°	180°
y	0	1.7	-1.7	0	1.7	-1.7	0	1.7	-1.7	0	1.7	-1.7	0

Scale

One big square
 along x -axis = 100°

One big square
 along y -axis = 1 unit



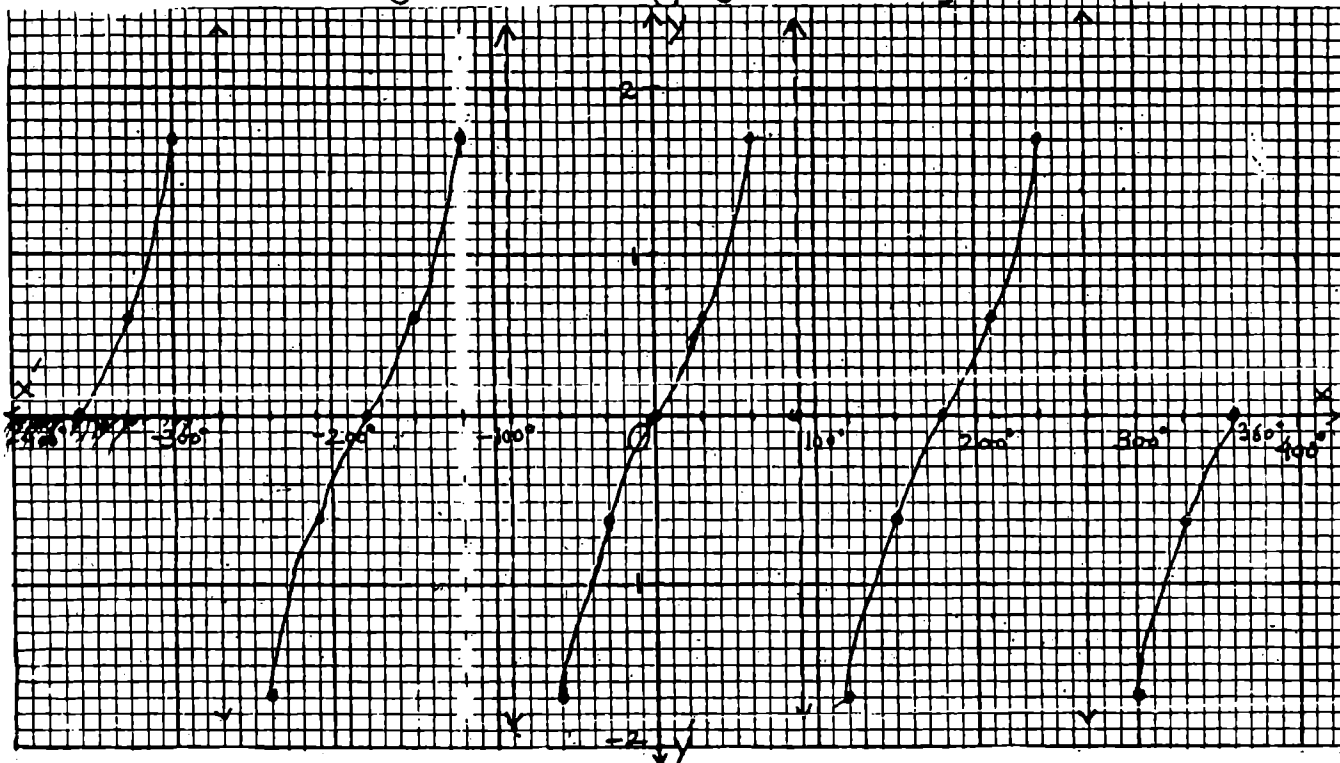
[7]

(iv) $y = \tan x$; $x \in [-2\pi, 2\pi]$

x	-360°	-330°	-300°	-270°	-240°	-210°	-180°	-150°	-120°	-90°	-60°	-30°	0°
y	0	0.6	1.7	∞	-1.7	-0.6	0	0.6	1.7	∞	-1.7	-0.6	0
x	30°	60°	90°	120°	150°	180°	210°	240°	270°	300°	330°	360°	
y	0.6	1.7	∞	-1.7	-0.6	0	0.6	1.7	∞	-1.7	-0.6	0	

Scale: One big square along x -axis = 100°

One big square along y -axis = 1 unit.

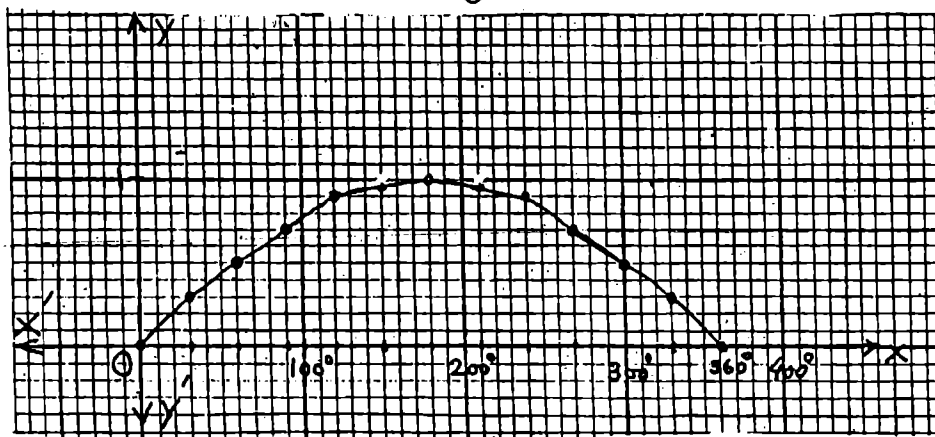


(v) $y = \sin \frac{x}{2}$; $x \in [0, 2\pi]$

x	0°	30°	60°	90°	120°	150°	180°	210°	240°	270°	300°	330°	360°
y	0	0.3	0.5	0.7	0.9	0.96	1.0	0.96	0.9	0.7	0.5	0.3	0

Scale: One big square along x -axis = 100°

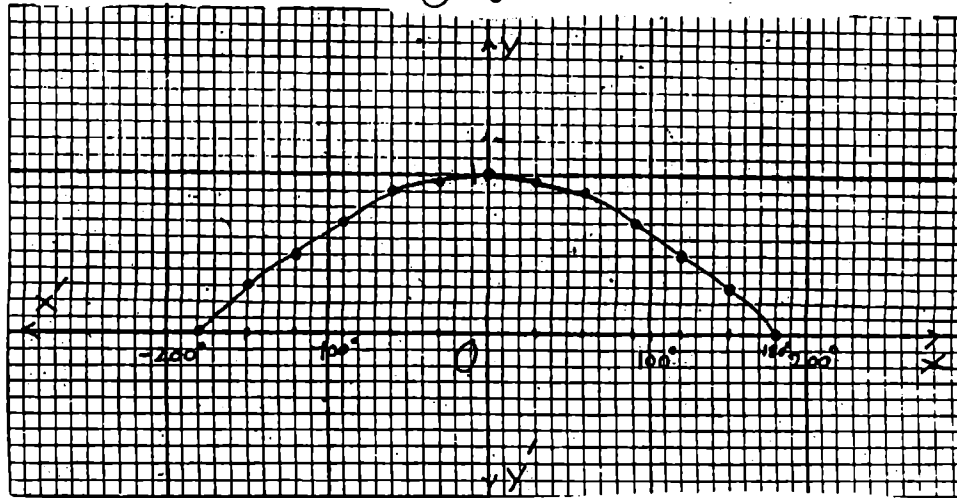
One big square along y -axis = 1 unit.



vi) $y = \cos \frac{x}{2}$; $x \in [-\pi, \pi]$ 8

x	-180°	-150°	-120°	-90°	-60°	-30°	0°	30°	60°	90°	120°	150°	180°
y	0	0.3	0.5	0.7	0.9	0.96	1	0.96	0.9	0.7	0.5	0.3	0

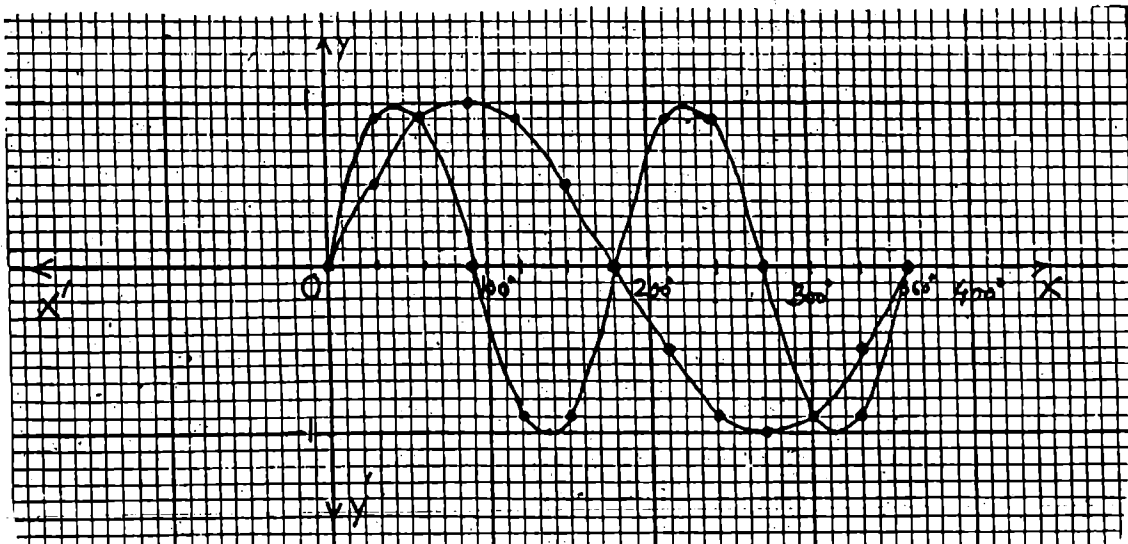
Scale: One big square along x -axis = 100°
One big square along y -axis = 1 unit



2. (i) $y = \sin x$ and $y = \sin 2x$ $x \in [0, 2\pi]$

x	0°	30°	60°	90°	120°	150°	180°	210°	240°	270°	300°	330°	360°
$y = \sin x$	0	0.5	0.9	1	0.9	0.5	0	-0.5	-0.9	-1	-0.9	-0.5	0
$y = \sin 2x$	0	0.9	0.9	0	-0.9	-0.9	0	0.9	0.9	0	-0.9	-0.9	0

Scale: One big square along x -axis = 100°
One big square along y -axis = 1 unit.

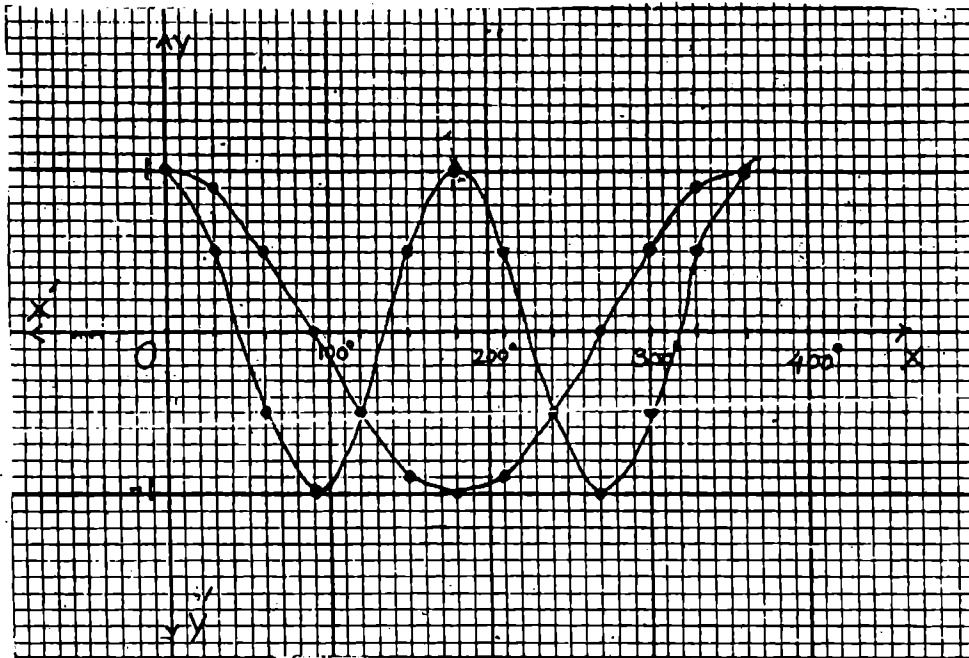


ii) $y = \cos x$ and $y = \cos 2x$; $x \in [0, 2\pi]$

x	0°	30°	60°	90°	120°	150°	180°	210°	240°	270°	300°	330°	360°
$y = \cos x$	1	0.9	0.5	0	-0.5	-0.9	-1	-0.9	-0.5	0	0.5	0.9	1
$y = \cos 2x$	1	0.5	-0.5	-1	-0.5	0.5	1	0.5	-0.5	-1	-0.5	0.5	1

Scale: One big square along x -axis = 100°

One big square along y -axis = 1 unit.



3. Solve graphically:

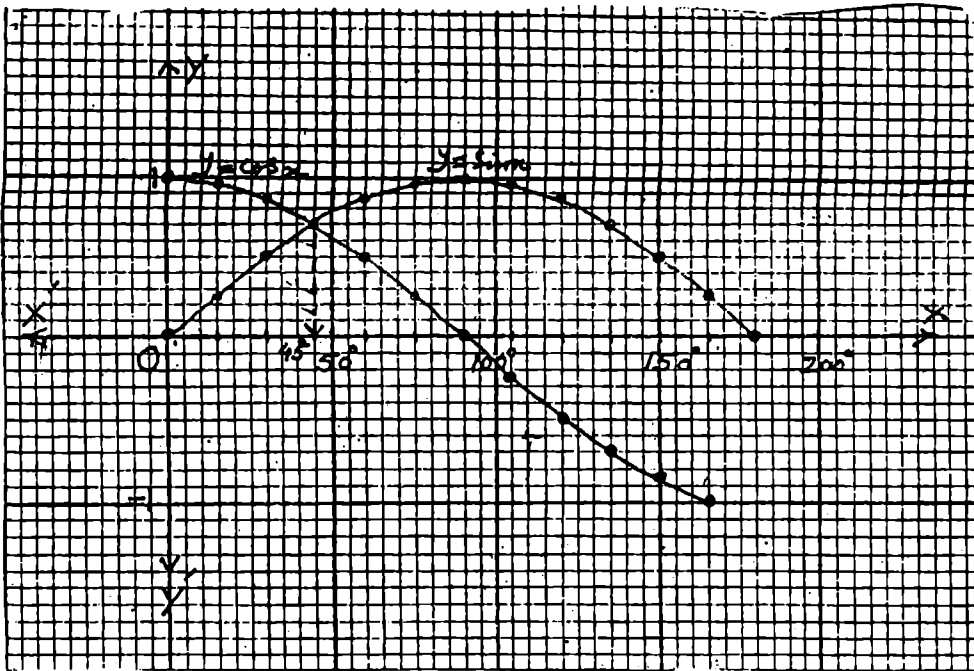
(i) $\sin x = \cos x$; $x \in [0, \pi]$

We draw the graphs of $y = \sin x$ and $y = \cos x$; $x \in [0, \pi]$

x	0°	15°	30°	45°	60°	75°	90°	105°	120°	135°	150°	165°	180°
$y = \sin x$	0	0.25	0.5	0.7	0.86	0.96	1	0.96	0.86	0.7	0.5	0.25	0
$y = \cos x$	1	0.96	0.86	0.7	0.5	0.25	0	-0.25	-0.5	-0.7	-0.86	-0.96	-1

Scale: One big square along x -axis = 50° .

One big square along y -axis = 1 unit.



The graph shows that the two curves intersect each other at a point where $x = 45^\circ$.

Thus the solution set = $\{45^\circ\}$ Ans.

ii) $\sin x = x$; $x \in [0, \pi]$

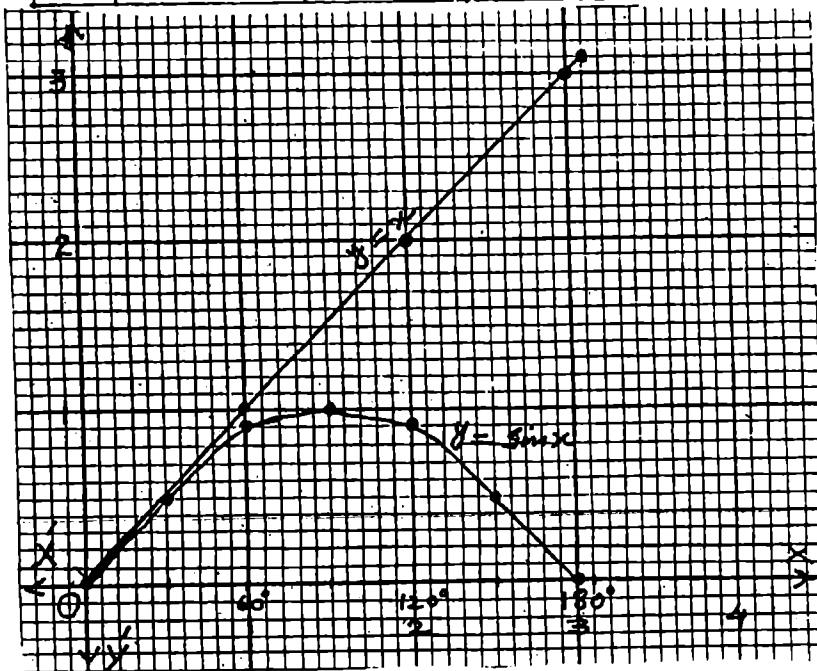
We draw the graphs of $y = \sin x$ and $y = x$

For $y = \sin x$

x	0°	30°	60°	90°	120°	150°	180°
$y = \sin x$	0	0.5	0.9	1	0.9	0.5	0

For $y = x$

x	0	1	2	3	3.14
y	0	1	2	3	3.14



Scale For $y = \sin x$

One big square along x-axis = 60°

One big square along y-axis = 1 unit

For $y = x$

One big square along x-axis = 1 unit

One big square along y-axis = 1 unit.

The graph shows that the line $y = x$ intersects the curve $y = \sin x$ at the point where $x = 0^\circ$

Hence the solution set = $\{0^\circ\}$

Ans.