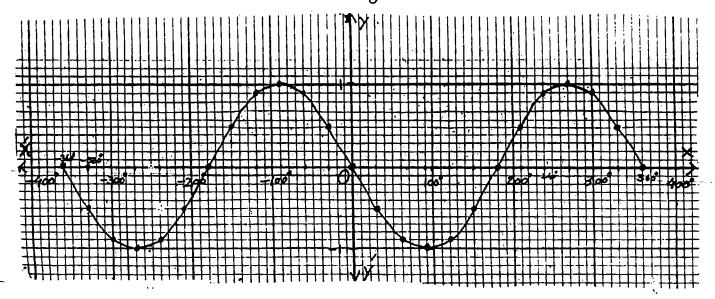
## **EXERCISE 11.2**1. i) $y = -\sin x$ ; $x \in [-2\pi, 2\pi]$

						_							
~	-366	ە33-	-300	-270°	-248	-210°	-18°	-150°	-120	- 90°	- 60°	-30°	o°
8	0	-0.5	-0-9	-1	-0.9	-0.5	0	0.5	0.9	1	0.9	0.5	0
				120°	150	188	2/0	24°	270	300	33 <i>ở</i>	360	-
y	-0.5	-0.9	-1	-0.9	- 05	0	0.5	0.9	l		0.5		

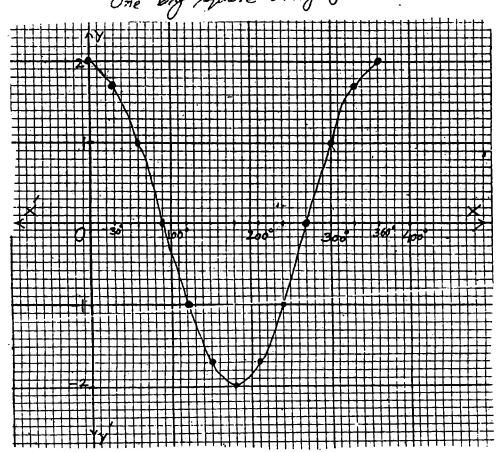
Stale: One big square along x-axis = 100°
One big square along y-axis = 1 unit.



i) y = 268x ; x ∈ [0,2x]

χ 0° 30 60°	000	12.00	1500	180°	2/0°	240°	270°	300	330°	36°	
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.



ii) y= tanz ; x ∈ [-π, π]

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		_	= 70			,		- [-//		<u></u>					
1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2	_	-	•1			000	- 60°	-30	0	300	60°	900	120	150	180
	2	4	-180	-120	-120	- 70		•	1		17		1.7	1-1.7	0
		7	0	1.7	1-1.7	0	1.7	-1.7	0	11.7	1-10/	1	<u>}</u>	1111	<del>┖</del>

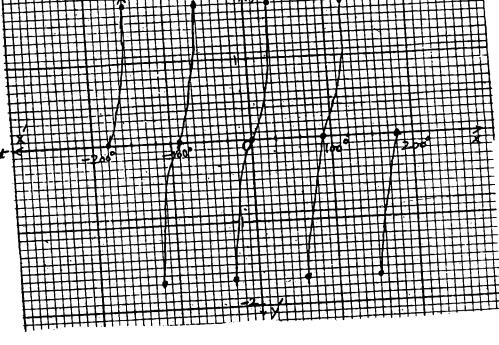
Scale

One big square

along x-axis = 100°

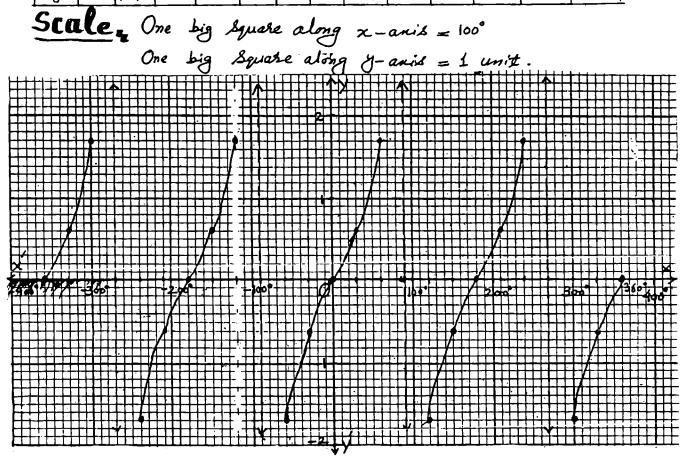
One big square

along y-axis=1 unit



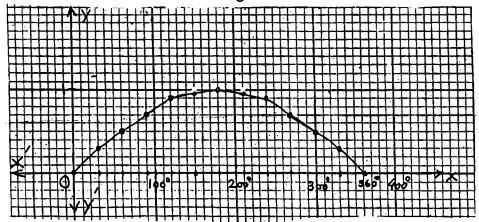
(iv)  $y = tann ; \alpha \in [-2\pi, 2\pi]$ 

x	-360	-330	-3 <i>o</i> °	-270°	-24°	-216	-180	-150°	-120	-90°	- 60°	-30°	o°
7			1.7									-0.6	0
K	36	68	90	120	1.50	180	210	240	270	300	330	360°	
y	0.6	1.7	20	-1.7	-0.6	0	0.6	1.7	00	-1.7	-0.6	0	



(V)  $y = \sin \frac{x}{2}$  ;  $x \in [0, 2\pi]$ × 0° 30° 60° 90° 120° 150° 180° 210° 240° 270° 300° 330° θ 0 0.3 0.5 0.7 0.9 0.96 1.0 0.96 0.9 0.7 0.5 0.3 360°

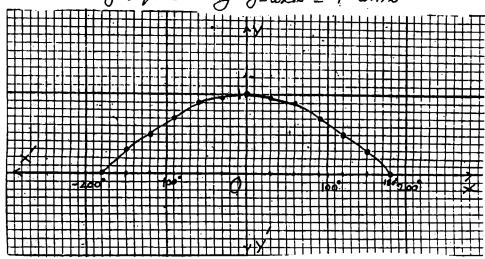
Scale: One big square along x-axis = 100°
One big square along y-axis = 1 unit.



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

x	-180	-15°	-120	- 90°	-60°	-30°	0°	30°	60°	90°	120	150°	180°	ſ
y	0	0.3	0.5	0.7	0.9							0.3		

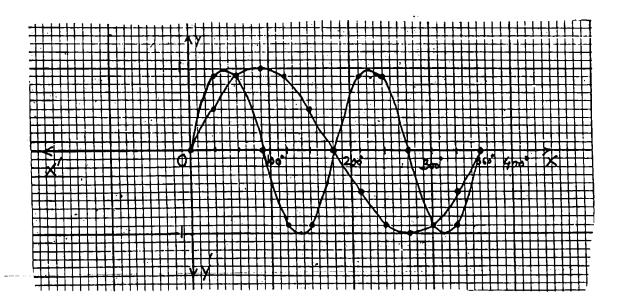
Scale: One big square along n-axis = 100°
One big square along y-axis = 1 unit



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

χ	0°	30°	60°	90°	120	150	180°	210°	240°	270°	300	330	360°
y= Sinx	0	0.5	0.9	1	0.9	0.5	o	-0.5	-0.9	-	-0.9	-0.5	0
8 = Seuzx	0	0.9	0.9	0	-0-9	-0.9	0	0.9	0.9	0	-0.9	-0.9	0

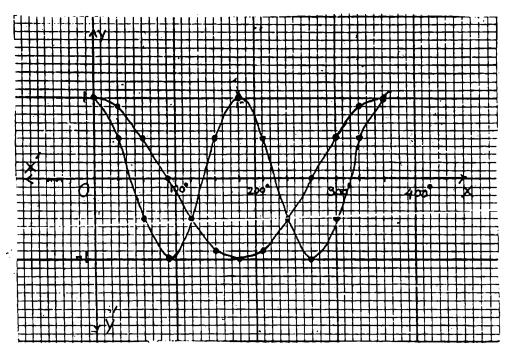
Scale: One big square along x-axis = 100°
One big square along y-axis = 1 unit.



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

x	o°	30°	60°	96	120	150	180	210	240	2 70°	300	330	360°
J=65x									-0.5		0.5	ا ـ ا	١
J=652x.	1	0.5	-0.5	<b>– 1</b>	-0.5	0.5		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.



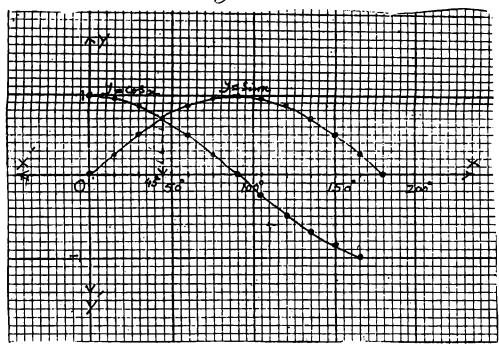
## 3. Solve graphically:

(i) Sinx = Cosx;  $x \in [0, T]$ We draw the graphs of y = Sinx and y = Cosx;  $x \in [0, T]$ 

x	o°	158	30	45°	60°	75	90	105°	120	135	15 <b>°</b>	165	180°
y= Sinx	0	025	0.5	0.7	0.86	0.96	1	0.96	0.86	0.7	0.5	0.25	0
y=0032			-				1	1		1	ł		

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°. Thus the Solution Set = {45°} Ans.

ii) Sinx = x;  $x \in [0, \pi]$ We draw the graphs of y = Sinx and y = x

For y= Sinx

x	o°	3o°	60°	90°	120	150°	180°
y= Sink	0	0.5	0.9	1	0.9	0.5	0

For d=x

				<del> </del>		T	1
	×	0		1	2	3	3.14
	7	0			2	3	3.14
		L — — — — — — — — — — — — — — — — — — —					Scale & For one big square along
$\parallel$		<del>1111</del>	<del>                                     </del>	<del>╽╏╏╏╏╏╏</del>	<del>                                      </del>		one of the same

g x-1xi8= 60° One big square along y-axis = 1 unit For y=x One big square along n-anis=lunit One big Square along y-cais=1 unit. The graph shows that the line y=n Intersects the curve y= linx at the point where x = 0°

# Hence the solution set = {0}}