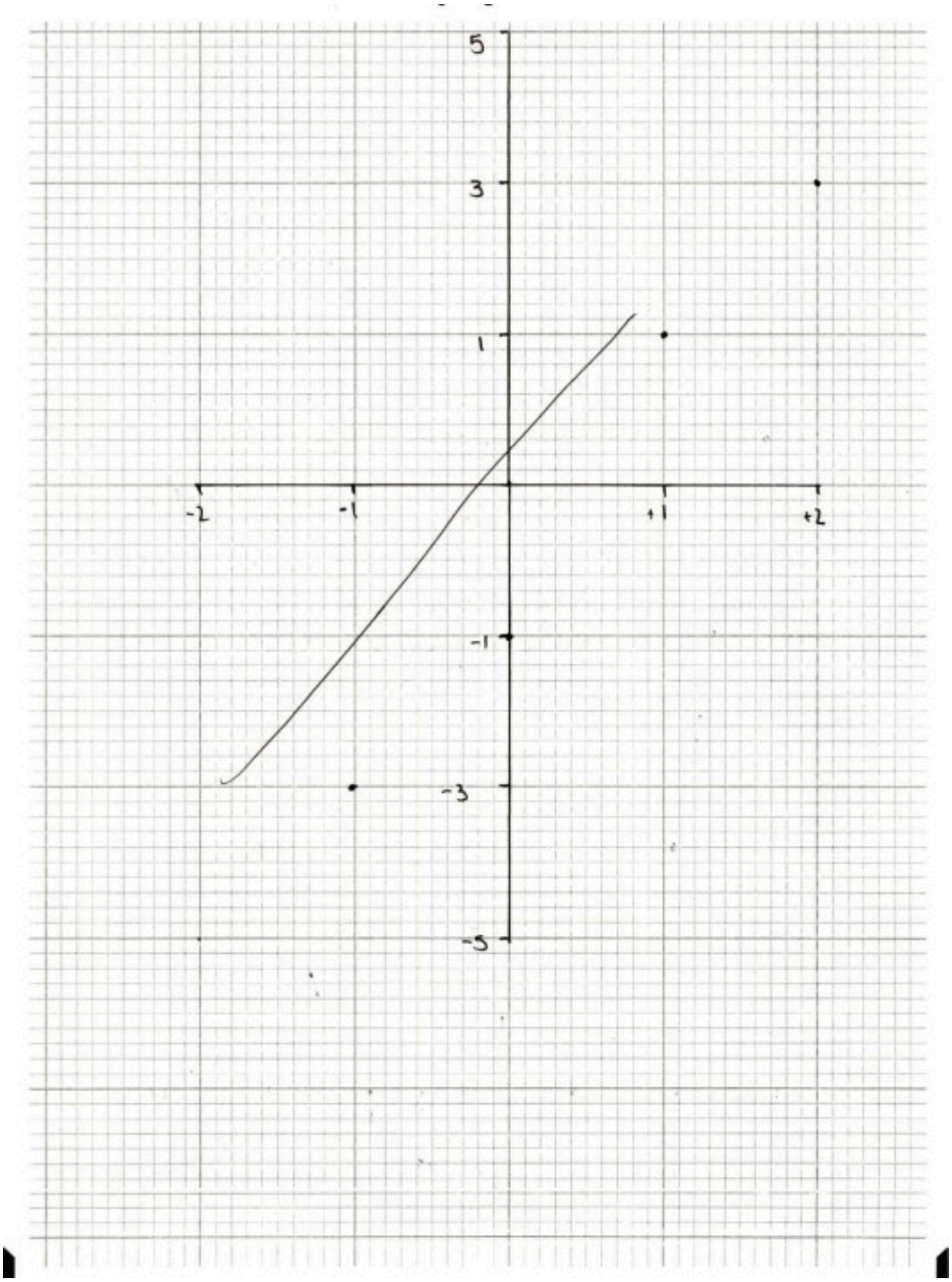
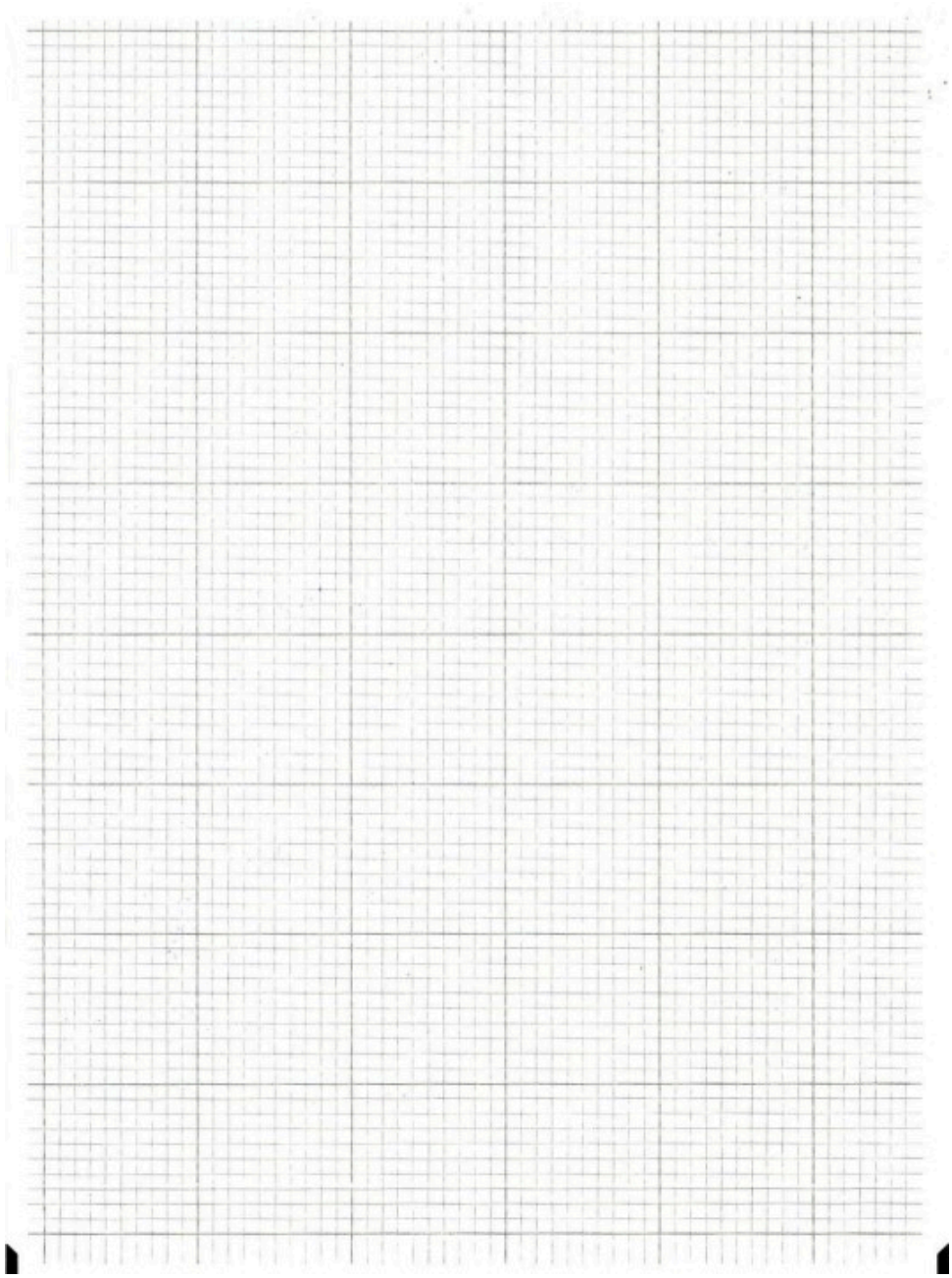

5
3
1
-1
-3
-5
-2
-1
+1
+2



(g(x)

f(x-3)

2(x-3)+1

2x-6+1

2x-5

g(fx)

g(2x+1)

x+1-3

x-2

$z = 3 - 2i + 3 - 2i$

sum = $\frac{5}{1}$, $\frac{6}{1}$

product = 6

sum = 5

5

$\begin{bmatrix} 1 & 0 \\ 2 & 1 \end{bmatrix} \times \begin{bmatrix} 3 & 1 \\ 2 & 4 \end{bmatrix}$

$= \begin{bmatrix} 1\times3 + 0\times2 & 1\times1 + 0\times4 \\ 2\times3 + 1\times2 & 2\times1 + 1\times4 \end{bmatrix}$

$= \begin{bmatrix} 3 & 1 \\ 6+2 & 2+4 \end{bmatrix}$

$= \begin{bmatrix} 3 & 1 \\ 8 & 6 \end{bmatrix}$

$f(x) = 2x+1$

$g(x) = x-3$

$f(g(x))$

$f(x-3)$

$2(x-3)+1$

$2x-6+1$

$2x-5$

$\frac{1}{2} \times \frac{1}{2}$

$\frac{(x+3)(x-3)}{(x-3)}$

$(-5)^2 - 4(1)(6)$

$25 - 24$

$= 1$

$\frac{1}{2}(ij + i - j)$

$\frac{1}{2}(2i)$

$\frac{i}{2} = i$

$|x| < 3 = \frac{2}{4} \times \frac{2}{4}$

$-3 < x < 3$

$= \frac{1}{2} \times \frac{1}{2}$

$= \frac{1}{4}$

$\frac{1}{2}ab\sin\theta$

$y = 2(1)+3$ (1,5)

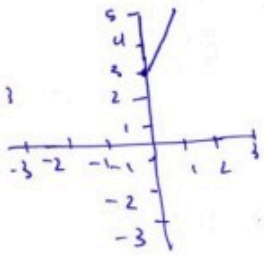
$y = 2+3$

$y = 5$

$y = 2(0)+3$

$y = 3$

(0,3)



Q. No. 2 Part (I)

$$\frac{3+4i}{5-2i}$$

$$= \frac{3+4i}{5-2i} \times \frac{5+2i}{5+2i}$$

$$= \frac{15+6i+20i+8i^2}{(5)^2-(2i)^2}$$

$$= \frac{15+26i-8}{25-4i^2}$$

$$= \frac{7+26i}{29}$$

$$= \frac{7}{29} + \frac{26}{29}i$$

where $a = \frac{7}{29}$, $bi = \frac{26}{29}i$

Q. No. 2 Part (II)

Inverse $f(x)$ & $g(x)$

Sol: $f(x) = 2x+1$ & $g(x) = x-3$

i) $f(g(x))$

$= f(x-3)$

$= 2(x-3)+1$

$= 2x-6+1 = 2x-5$

ii) $g(f(x))$

$= g(2x+1)$

$= (2x+1)-3$

$= 2x-2$

thus $f(g(x)) = 2x-6$

& $g(f(x)) = 2x-2$

Q. No. 2 Part (iii)

Graph

x	-2	-1	0	1	2
y	-5	-3	-1	1	3

$y = 2x - 1$

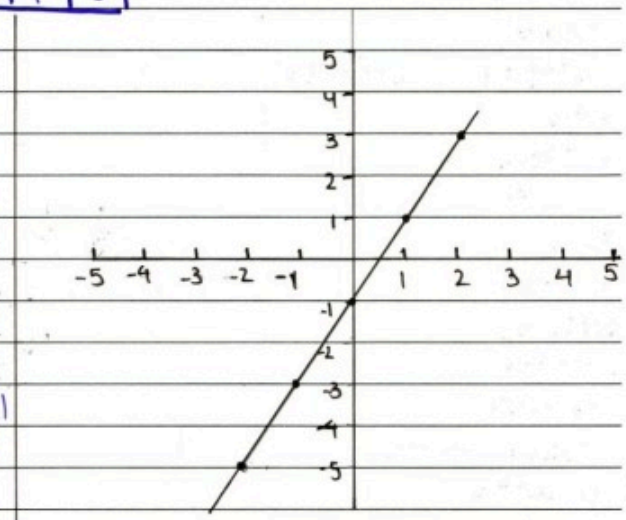
i) $y = 2(-2) - 1$
$y = -4 - 1$
$y = -5$

ii) $y = 2(-1) - 1$
$y = -2 - 1$
$y = -3$

iii) $y = 2(0) - 1$
$y = -1$

iv) $y = 2(1) - 1$
$y = 2 - 1$
$y = 1$

v) $y = 2(2) - 1$
$y = 4 - 1$
$y = 3$



graph is on paper.

Q. No. 2 Part (iv)

Graph

x	-2	-1	0.5	1	2
y	0	-3	-3.75	-3	0

$y = x^2 - 4$

vertex =

$x^2 - y = y \mid x^2 - y - 4 = 0$

$= \frac{-b}{2a}$

$= \frac{-(-1)}{2(1)}$

$= \frac{1}{2}$

$= 0.5$

put in eq

$(0.5)^2 - 4 = y$

$y = -3.75$

vertex = $(0.5, -3.75)$

i) $y = (1)^2 - 4$

$y = -3$

ii) $y = (2)^2 - 4$

$y = 0$

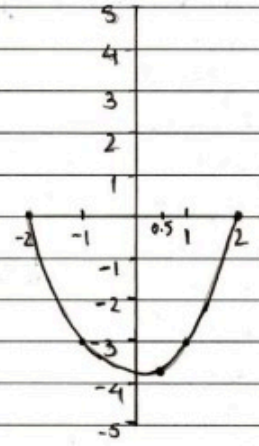
iii) $y = (-1)^2 - 4$

$y = -3$

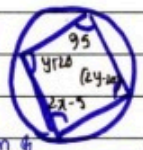
iv) $y = (-2)^2 - 4$

$y = 4 - 4$

$y = 0$



Q. No. 2 Part (v) Solving



As we know sum of opposite sides is suplementry then :-

$95 + 2x - 5 = 180$

$2x - 5 = 180 - 95$

$2x = 85 + 5$

$2x = 90$

$\boxed{x = 45}$

then

$(y + 20) + 2y - 20 = 180$

$y + 2y + 20 - 20 = 180$

$3y = 180$

$\boxed{y = 60}$

Q. No. 2 Part (vi)

vectors.

$A(1,2)$ & $B(5,6)$

$\vec{AB} = \vec{B} - \vec{A}$

$= (5-1, 6-2)$

$= [4, 4]$

$= 4\hat{i} + 4\hat{j}$

Magnitude

$|\vec{AB}| = \sqrt{(4)^2+(4)^2}$

$= 4\sqrt{2}$

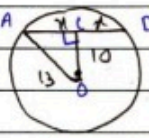
unit vector / $\hat{AB} = \frac{\vec{AB}}{|AB|}$

$= \frac{4\hat{i} + 4\hat{j}}{4\sqrt{2}}$

$= \frac{4\hat{i}}{4\sqrt{2}} + \frac{4\hat{j}}{4\sqrt{2}}$

$= \frac{\sqrt{2}}{2}\hat{i} + \frac{\sqrt{2}}{2}\hat{j}$

Q. No. 2 Part (vii) LENGHT



In the Δ AOC

$13^2 = 10^2 + x^2$

$13^2 - 10^2 = x^2$

$\sqrt{(13)^2-(10)^2} = x$

$x = 8.30\ m$

chord's length $= 8.30 \times 2$

$= 16.61\ cm$

as AC = CD

because OC bisects AD

Construction:- Draw a line 'OC' perpendicular to AD which bisects it.

Q. No. 2 Part (viii) Simplify

$$= \frac{x^2-5x+6}{x^2-4} \times \frac{x+2}{x^2+x-6}$$

$$= \frac{x^2-3x-2x+6}{(x+2)(x-2)} \times \frac{x+2}{x^2+3x-2x-6}$$

$$= \frac{x(x-3)-2(x-3)}{(x+2)(x-2)} \times \frac{x+2}{x(x+3)-2(x+3)}$$

$$= (x-2)(x-3)$$

$$= \frac{x(x-3)-2(x-3)}{(x+2)(x-2)} \times \frac{x+2}{(x-2)(x+3)}$$

$$= \frac{(x-2)(x-3)}{(x+2)(x-2)} \times \frac{x+2}{(x-2)(x+3)}$$

$$= \frac{x-3}{(x-2)(x+3)}$$

or

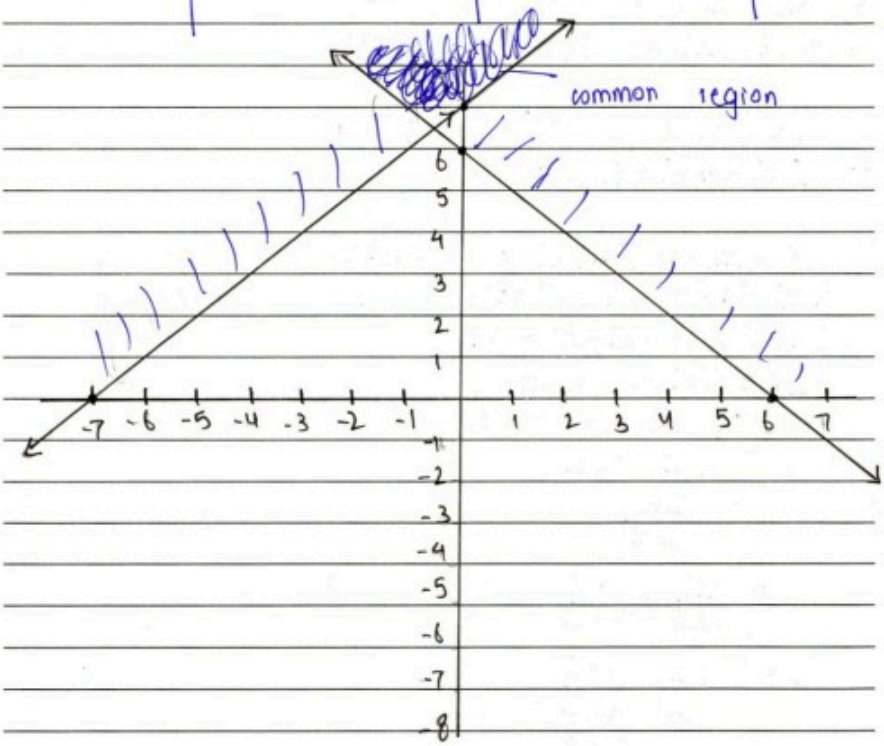
$$= \frac{x-3}{x^2+3x-2x-6}$$

$$= \frac{x-3}{x^2+x-6}$$

Q. No. 2 Part (ix)

Graph

associated equations		test points
$x+y=6$,	$x-y=-7$	put (0,0) in 1
put $x=0$	put $x=0$	$0 \leq 6$
$y=6$ (0,6)	$y=7$ (0,7)	true
put $y=0$	put $y=0$	put (0,0) in 2
$x=6$ (6,0)	$x=-7$ (-7,0)	$0 \geq -7$
		true



Q. No. 3 (Page 1) long question

$(2+i)x + (1-i)y = 3$ —i

$(1+i)x - iy = 2$ —ii

multiply eq-i with 'i' & ii with (1-i)

$= (2+i)xi + i(1-i)y = 3i$ —ii

then

$= (1-i)(1+i)x - i(1-i)y = 2(1-i)$

$= (1-i)(1+i)x - i(1-i)y = 2-2i$

$(1-i)(1+i)x - i(1-i)y = 2-2i$

$+ (2+i)xi + i(1-i)y = 3i$

$(1-i)(1+i)x + (2+i)xi = 2-2i+3i$

$(1+i-i-i^2)x + 2xi + i^2x = 2+i$

$(1+1)x + 2xi - x = 2+i$

$2x + 2xi - x = 2+i$

$x(2+2i-1) = 2+i$

$x(1+2i) = 2+i$

$x = \frac{2+i}{1+2i}$

$x = \frac{2+i}{1+2i} \times \frac{1-2i}{1-2i}$

$x = \frac{(2+i)(1-2i)}{(1)^2 - 2(2i)^2}$

$x = \frac{2-4i+i-2i^2}{1-4i^2}$

Q. No. 3 (Page 2)

$$x = \frac{2+2-4i+i}{1+4}$$

$$x = \frac{4-3i}{5}$$

$$x = \frac{4}{5} - \frac{3i}{5}$$

putting in eq-2

$$(1+i)\left(\frac{4-3i}{5}\right) - iy = 2$$

$$\frac{4-3i+4i-3i^2}{5} - iy = 2$$

$$\frac{4+i+3}{5} - iy = 2$$

$$\frac{7+i}{5} - iy = 2$$

$$-iy = 2 - \frac{7+i}{5}$$

$$-iy = \frac{10-7-i}{5}$$

$$-iy = \frac{3-i}{5}$$

$$-y = \frac{3-i}{5} \div i$$

$$-y = \frac{3-i}{5} \times \frac{1}{i}$$

$$-y = \frac{3-i}{5i}$$

$$y = \frac{-3+i}{5i}$$

$$y = \frac{-3+i}{5i} \times \frac{-5i}{-5i}$$

$$y = \frac{15i-5i^2}{-(5i)^2}$$

$$y = \frac{15i+5}{-(-25)}$$

$$y = \frac{5+15i}{25}$$

$$y = \frac{5}{25} + \frac{15}{25}i$$

$$y = \frac{1}{5} + \frac{3}{5}i$$

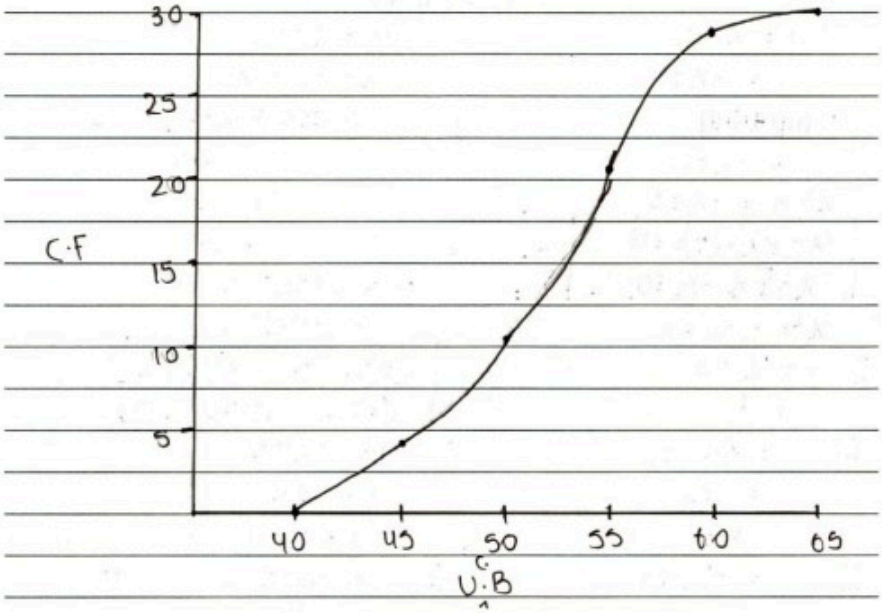
Q. No. 4 (Page 1)

OGIVE

C.I	F	C.F	UCB
35-40	0	0	40
40-45	4	0+4=4	45
45-50	7	4+7=11	50
50-55	10	11+10=21	55
55-60	6	21+6=27	60
60-65	3	27+3=30	65

graph on next page →

Q. No. 4 (Page 2)



Q. No. 5 (Page 1)

Graph

$y = x^2 - 1$

$y = -x + 3$

$y = -x + 3$

x	-2	-1	0	1	2
y	5	4	3	2	1

$y = -(-2) + 3$

i) $y = 2 + 3$
$= 5$

ii) $y = -(-1) + 3$
$= 1 + 3$
$= 4$

iii) $y = -(0) + 3$
$y = 3$

iv) $y = -(1) + 3$
$= -1 + 3$
$= 2$

v) $y = -(2) + 3$
$y = -2 + 3$
$y = 1$

$y = x^2 - 1$

$x^2 - y - 1 = 0$

vertex $= \frac{-(-1)}{2(1)}$

$= \frac{1}{2}$

$= 0.5$

$y = (0.5)^2 - 1$

$= -0.75$

x	-3	-2	-1	0.5	1	2
y	8	3	0	-0.75	0	3

i) $y = (-2)^2 - 1$
$y = 4 - 1$
$y = 3$

ii) $y = (-1)^2 - 1$
$y = 1 - 1$
$y = 0$

iii) $y = (1)^2 - 1$
$y = 0$

iv) $y = (2)^2 - 1$
$y = 4 - 1$
$y = 3$

graph is on ~~graph~~ paper. →

point of intersection :- S.S {(-2.5, 5.5), (1.5, 1.5)}

Q. No. 5 (Page 2)

