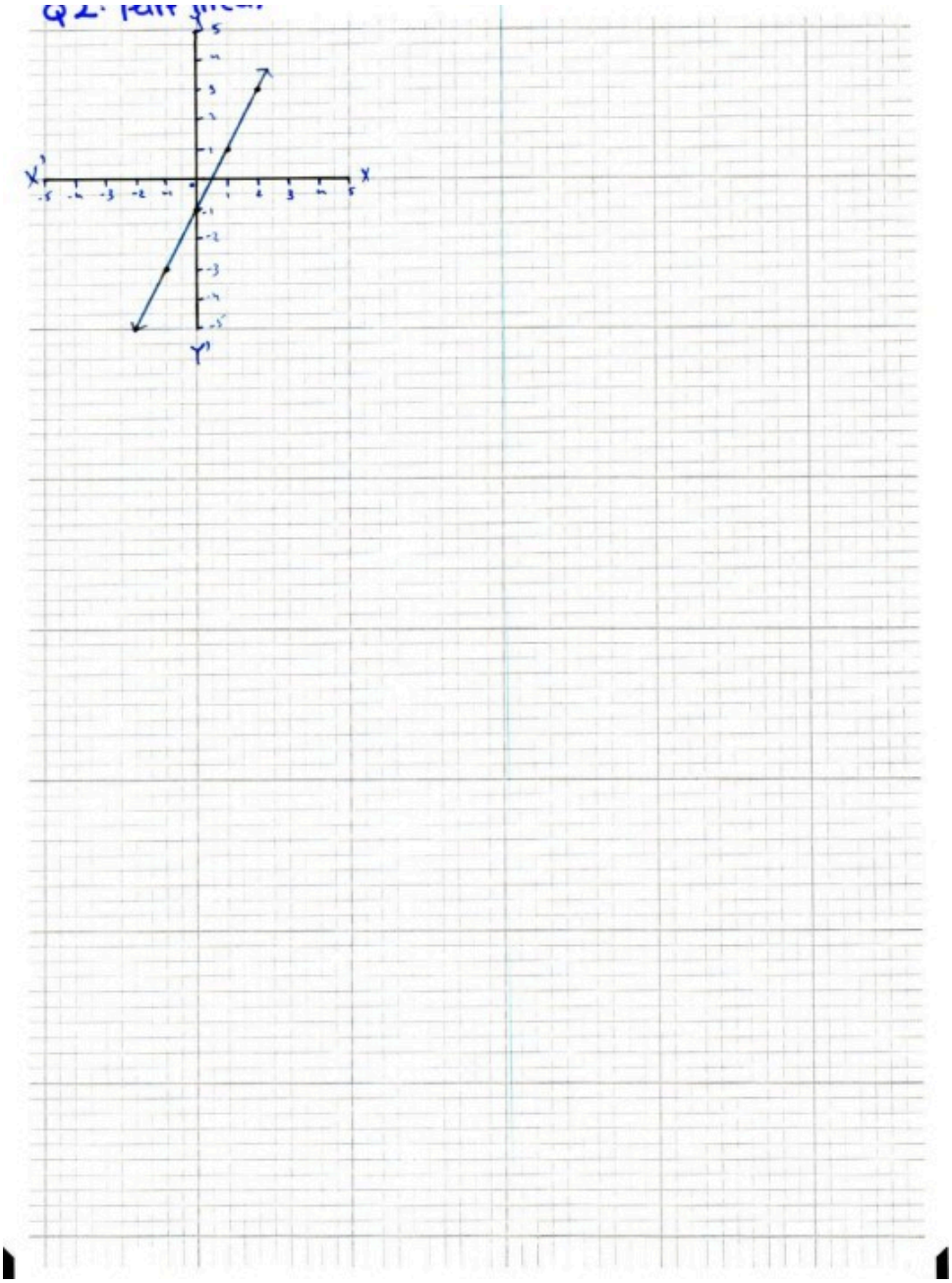
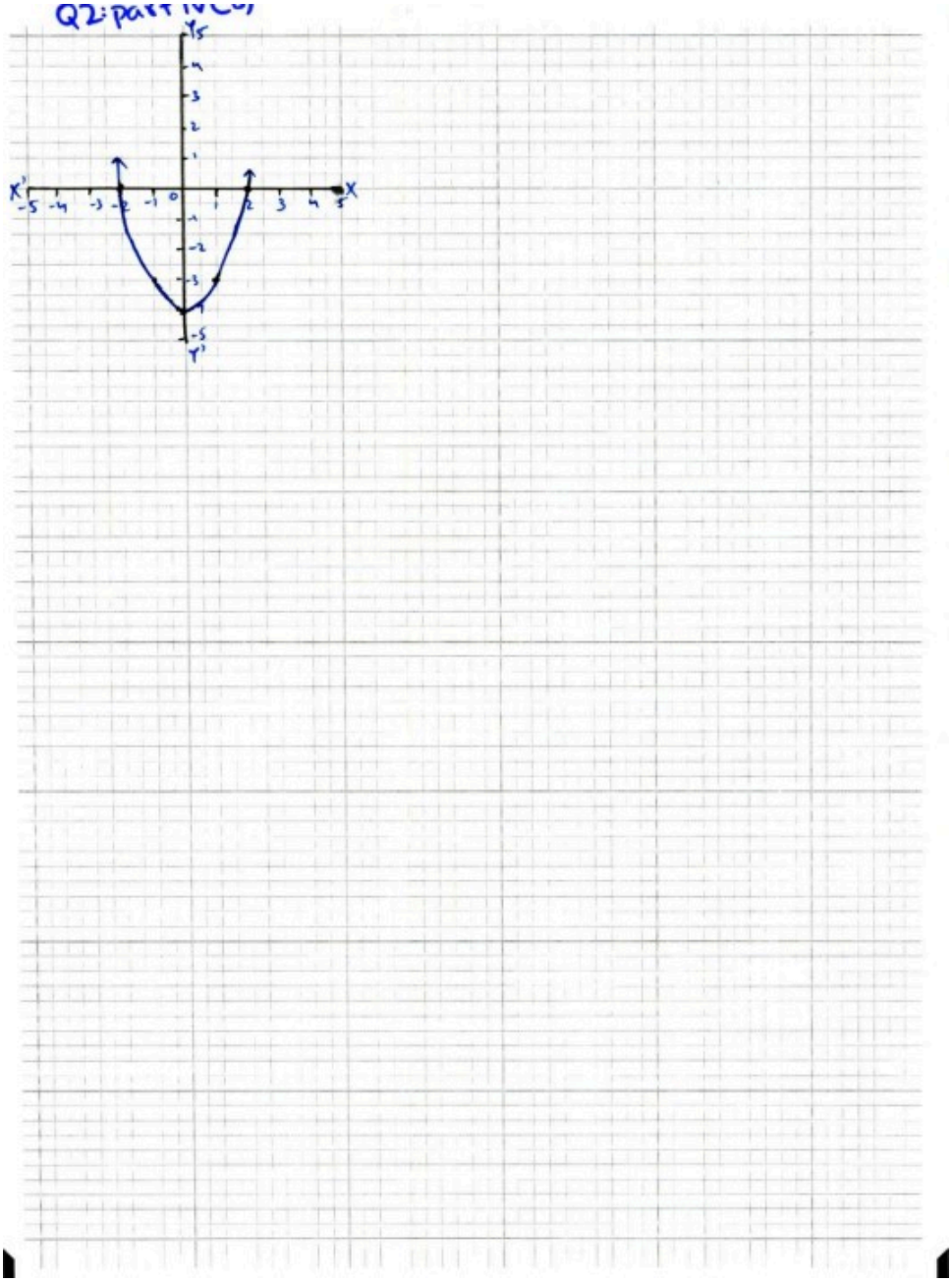
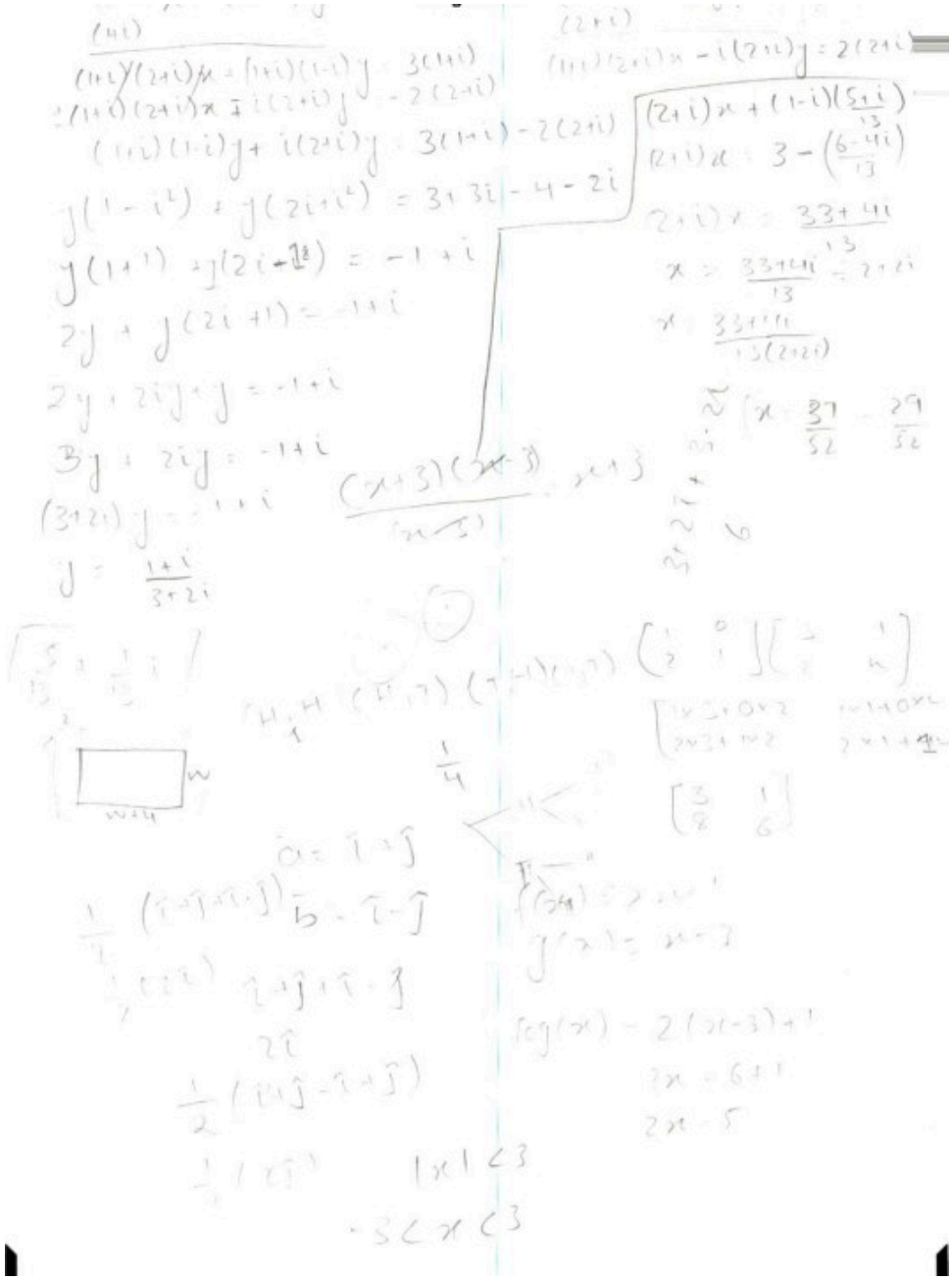

Q2.
X
X'
Y'


Q2: part iv(c)
Y
X'
X
Y'



Q. No. 2 Part (i)

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

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

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

$\frac{15+6i+20i+8i^2}{25+4}$

$\frac{15-8+26i}{29}$

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

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

Q. No. 2 Part (ii)

$f(x) = 2x+1$ $\quad g(x) = x-3$

i) $f(g(x))$:

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

$= 2x-6+1$

$= 2x-5$

ii) $g(f(x))$:

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

$2x-2$

Q. No. 2 Part (iii)

$Y = 2x - 1$

Table:

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

graph at the end on graph paper. No 1.

Scale: 2 small sq → 1 unit

Q. No. 2 Part (iv)

Graph $y = x^2 - 4$

$a = 1 \quad b = 0 \quad c = -4$

- vertex: $\frac{-b}{2a}$

$\frac{0}{2 \times 1} = 0$

- table:

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

graph at end at graph paper No. 2.

Scale: 2 small sq → 1 unit

Q. No. 2 Part (v)

• **Value of x:**

Since it is a cyclic quadrilateral so opposite angles add up to 180°:

$2x - 5 + 95 = 180°$

$2x + 90 = 180$

$2x = 90$

$\boxed{x = 45°}$

• **Value of y:**

$y + 2\phi + 2y - 2\phi = 180$

$3y = 180$ 60

$\boxed{y = 60°}$

Q. No. 2 Part (vi)

$$\frac{2}{x-1} + \frac{3}{x+1} = 1$$

$$\frac{2(x+1)+3(x-1)}{(x+1)(x-1)} = 1$$

$$\frac{2x+2+3x-3}{(x+1)(x-1)} = 1$$

$$\frac{5x-1}{x^2-1} = 1$$

$$5x-1 = x^2-1$$

$$x^2-5x+1+x=0$$

$$x^2-5x=0$$

$$x(x-5)=0$$

$x-5=0$

$x=5$

Check: $\frac{2}{5-1} + \frac{3}{5+1} = 1$

$\frac{2}{4} + \frac{3}{6} = 1$

$0.5+0.5=1$

$1=1$

$x=0$

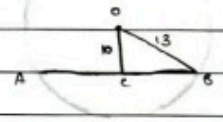
check: $\frac{2}{0-1} + \frac{3}{0+1} = 1$

$-2+3=1$

$1=1$

Solution set: $\{0, 5\}$

Q. No. 2 Part (vii)



In ΔOCB where $C = 90°$

$13^2 = 10^2 + CB^2$

$CB^2 = 13^2 - 10^2$

$CB = \sqrt{13^2 - 10^2}$

$CB = \sqrt{69}$

Since CB is half of AB.

So, $AB = 2CB$

$AB = 2\sqrt{69} \approx 16.61 cm$

Q. No. 2 Part (viii)

: Simplify :

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

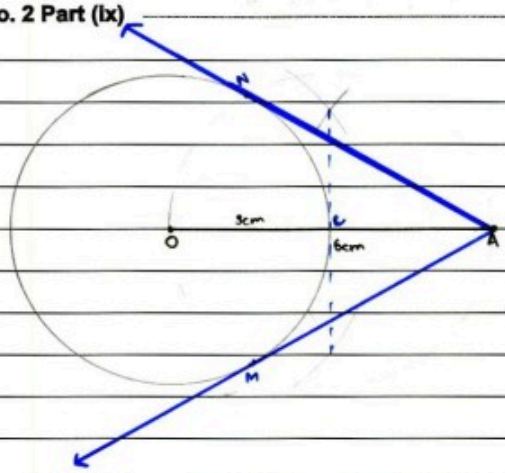
$$\frac{x^2-3x-2x+6}{x^2-2^2} \times \frac{x+2}{x^2+3x-2x-6}$$

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

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

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

Q. No. 2 Part (ix)



Steps of construction:

i) Draw circle of $r = 3$ cm at O.

ii) Take point A outside the circle 6 cm away from center O.

iii) Bisect $\overline{OA}$ at C.

iv) With C as center, draw dotted circle of $r = OC$.

v) Dotted circle intersects original circle (O) at point M and N.

vi) join A to M and N.

vii) $\overrightarrow{AM}$ and $\overrightarrow{AN}$ are required tangents.

Q. No. 3 (Page 1) System of Equations

$(2+i)x + (1-i)y = 3$ ...(i) $(1+i)x - iy = 2$ ...(ii)

× i × $(1-i)$

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

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

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

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

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

$2ix - x + 2x = i + 2$

$2ix + x = 2 + i$

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

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

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

$\therefore \frac{2+i}{1+2i} \times \frac{1-2i}{1-2i}$

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

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

Put value of x in (ii)

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

$\frac{7}{5} + \frac{1}{5}i - 2 = iy$

$\frac{-3}{5} + \frac{1}{5}i = iy$

$\therefore y = \left(\frac{-3}{5} + \frac{1}{5}i\right) \div i$

$\frac{-3+i}{5} \div i$

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

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

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

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

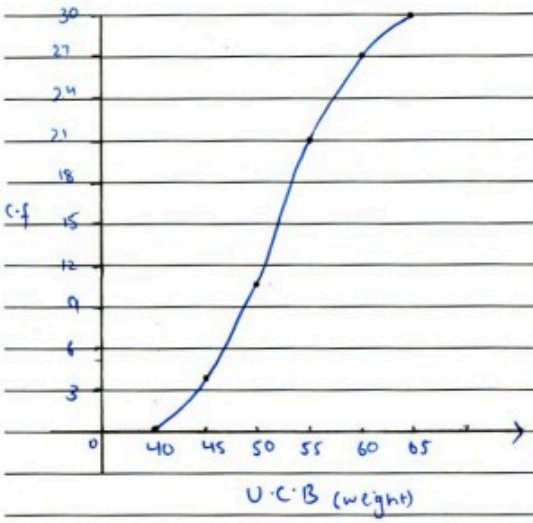
Q. No. 3 (Page 2)

Q. No. 4 (Page 1)

Cumulative f table:

Cl	f	c.f	U.C.B
			40
40 - 45	4	4	45
45 - 50	7	11	50
50 - 55	10	21	55
55 - 60	6	27	60
60 - 65	3	30	65

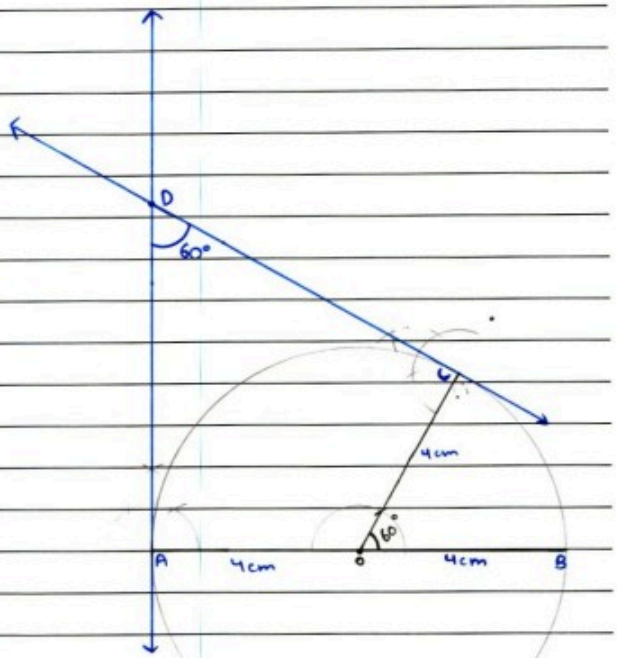
Ogive:



Q. No. 4 (Page 2)

Q. No. 5 (Page 1)

Construction:



Steps:

i) Draw circle of $r = 4cm$. at O.

ii) Draw diameter AB.

iii) Draw tangent $\overleftrightarrow{AD} \perp \overline{OA}$ at point A.

iv) Draw an angle of 60° at O such that it cuts circumference at C.

v) At C draw tangent $\overleftrightarrow{CD} \perp \overline{OC}$.

vi) Both tangents ~~meet~~ meet at D outside circle and angle between them is 60°.

Q. No. 5 (Page 2)