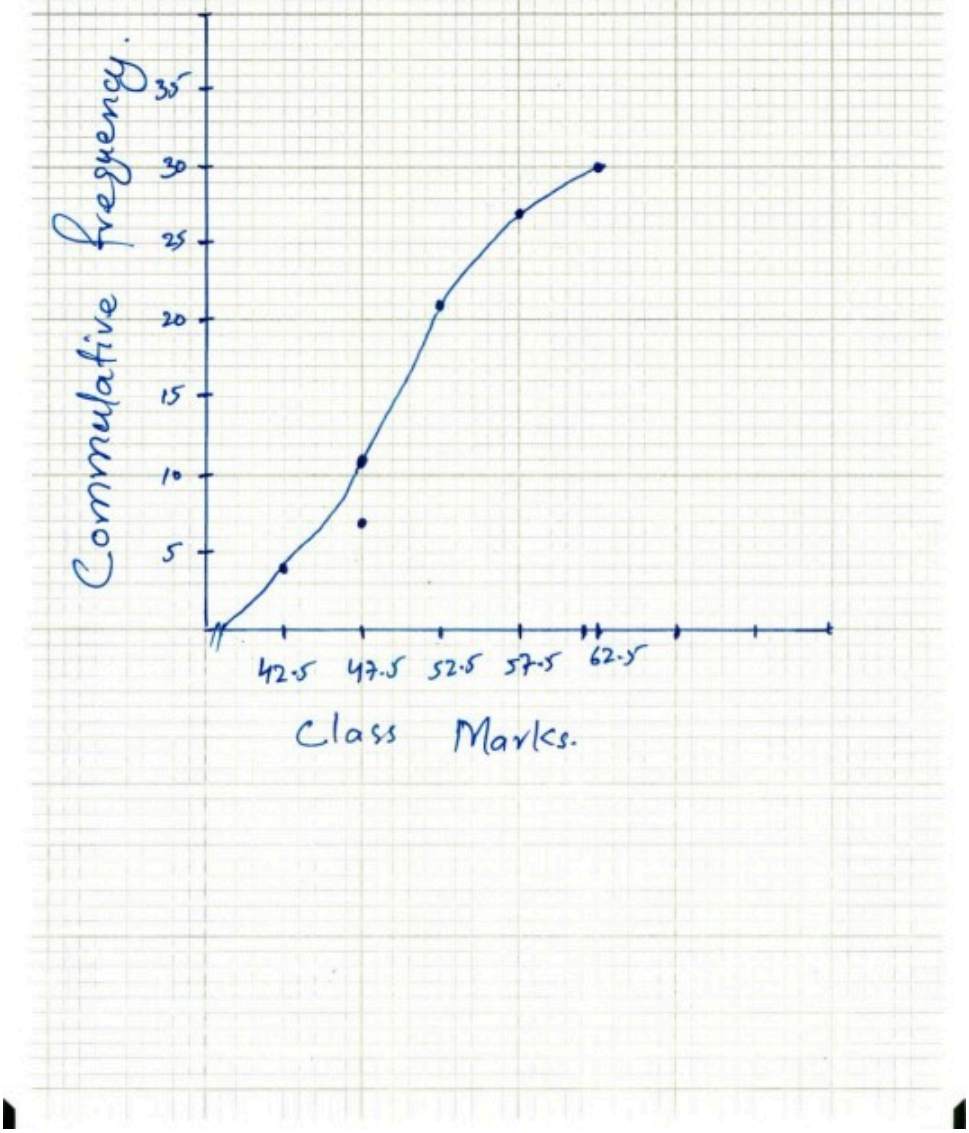
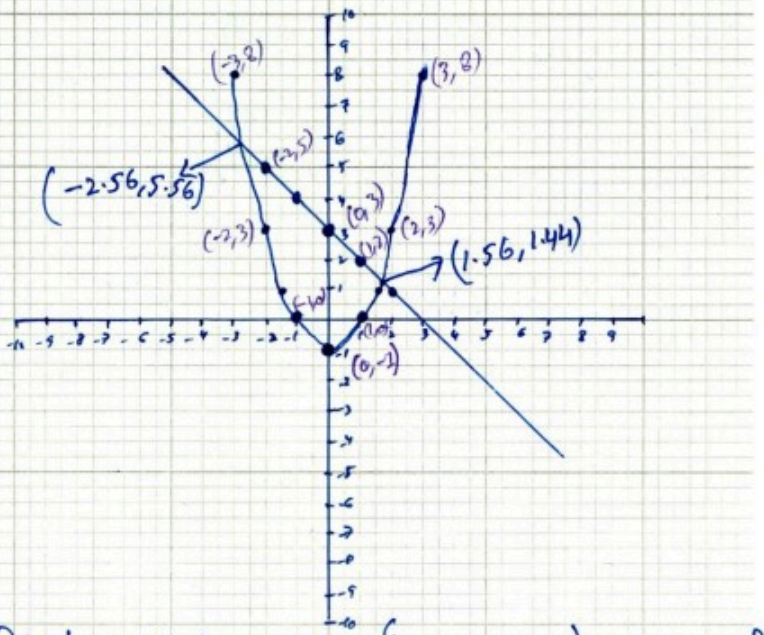
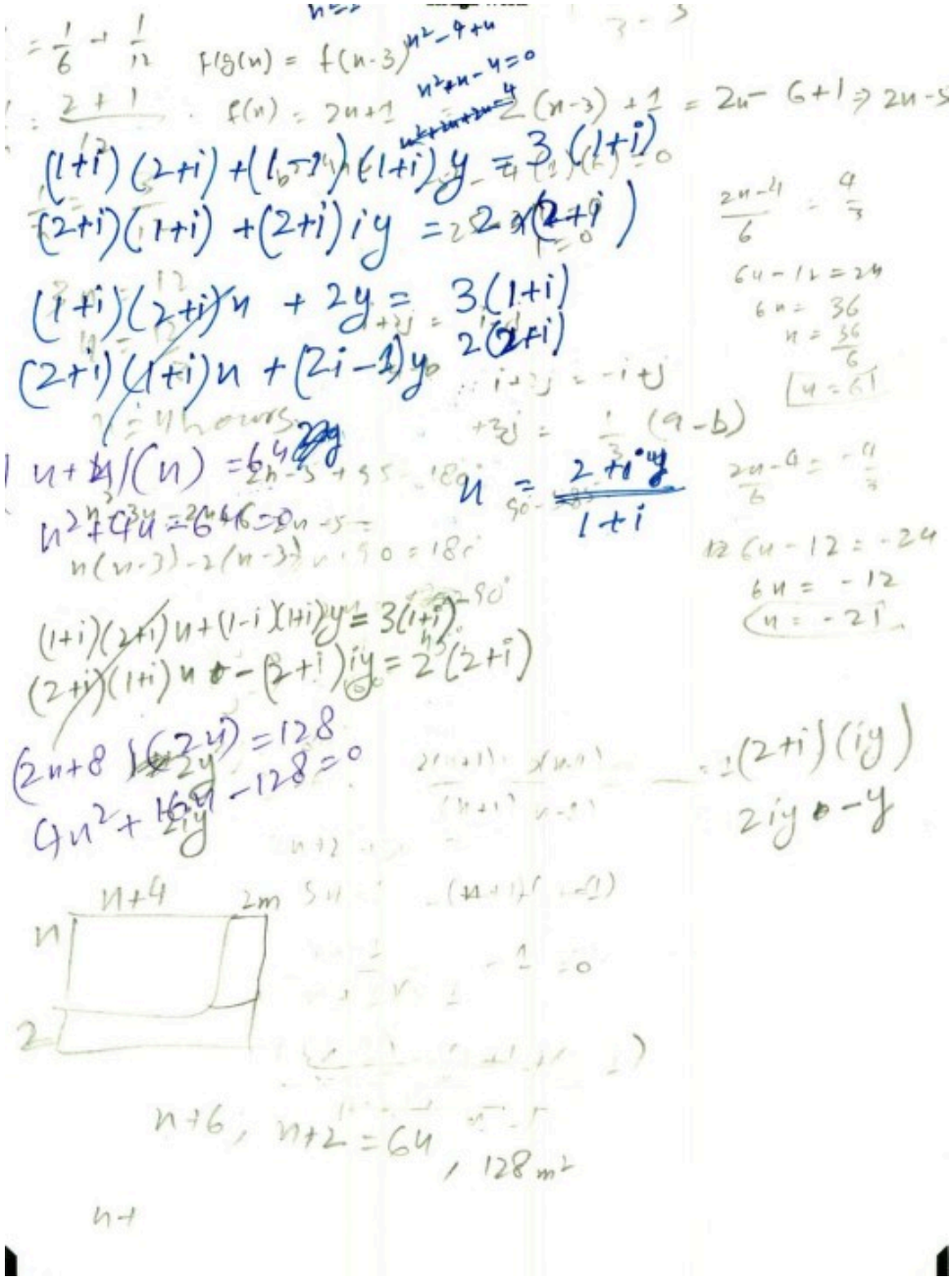
QUESTION # 04. SECTION 'C'.



QUESTION # 05. Section 'C'



Point of intersection = {(1.56, 1.44), (-2.56, 5.56)}



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

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

$$(1+i)(2+i)u+2y=3(1+i)$$

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

$$u=\frac{2+iy}{1+i}$$

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

$$(2+i)(1+i)u-(2+i)iy=2(2+i)$$

$$(2u+8)(2+y)=128$$

$$4u^2+16y-128=0$$

$u+6,\ u+2=64$, $128\ m^2$

Q. No. 2 Part (i)

$(3+4i) \div (5-2i)$ in form of $a+bi$.

$\frac{3+4i}{5-2i}$ Multiply and divide with conjugate of $5-2i$ $(5+2i)$.

$\frac{3+4i}{5-2i} \times \frac{5+2i}{5+2i}$ $\frac{(3+4i)(5+2i)}{5^2-(2i)^2}$ $\frac{15+6i+20i+8i^2}{25-4i^2}$

$\frac{15+26i+8(-1)}{25-4(-1)}$ $\frac{15-8+26i}{25+4}$ $\frac{7+26i}{29}$

$\therefore i^2 = -1$.

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

Q. No. 2 Part (ii)

$A = \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$. Find A^{-1}.

$A^{-1} = \frac{\text{Adj of } A}{|A|}$ $\quad A = \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$ $\quad \text{Adj of } A = \begin{bmatrix} 4 & -2 \\ -3 & 1 \end{bmatrix}$

$|A| = \begin{vmatrix} 1 & 2 \\ 3 & 4 \end{vmatrix} = (1 \times 4) - (2 \times 3) = 4 - 6 = -2.$

$|A| = -2$

$A^{-1} = \frac{\begin{bmatrix} 4 & -2 \\ -3 & 1 \end{bmatrix}}{-2} = \begin{bmatrix} \frac{4}{-2} & \frac{-2}{-2} \\ \frac{+3}{-2} & \frac{1}{-2} \end{bmatrix}$

$A^{-1} = \begin{bmatrix} -2 & 1 \\ \frac{3}{2} & -\frac{1}{2} \end{bmatrix}$ Ans:

Q. No. 2 Part (iii)

Word Problems:-

Ali's time = 6 hours Ali's work rate = $\frac{1}{6}$

Ahmed's time = 12 hours Ahmed's work rate = $\frac{1}{12}$

Total time = n Total work rate = $\frac{1}{n}$

$$\text{Work rate} = \frac{1}{t}$$

According to condition:-

$$\frac{1}{n} = \frac{1}{6} + \frac{1}{12} \qquad \frac{1}{n} = \frac{2+1}{12}$$

$$\frac{1}{n} = \frac{3}{12}, \quad 3n = 12, \quad 0 = 3n - 12 \text{ —— equation}$$

$$3n = 12, \quad n = \frac{12}{3}, \quad n = 4 \text{ hours.}$$

$n = 4$ hours Ans.

Q. No. 2 Part (iv)

$$\left|\frac{2x-4}{6}\right| = \frac{4}{3} \quad x \in R.$$

$$\frac{2x-4}{6} = \pm\frac{4}{3}.$$

$$\frac{2x-4}{6} = \frac{4}{3} \qquad \frac{2x-4}{6} = \frac{-4}{3}$$

$$6x-12 = 24 \qquad 6x-12 = -24$$

$$6x = 24+12 \qquad 6x = -24+12$$

$$6x = 36 \qquad 6x = -12$$

$$x = \frac{36}{6} \qquad x = \frac{-12}{6}$$

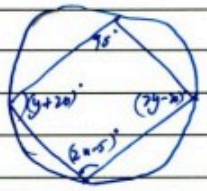
$$\boxed{x = 6} \qquad \boxed{x = -2}.$$



Solution = $\{-2, 6\}$. Ans.

Q. No. 2 Part (v)

Find x and y.



First find 'x':

According to theorem:

$\angle ADC + \angle ABC = 180^\circ$

$95^\circ + 2x - 5^\circ = 180^\circ$

$2x - 5 + 95^\circ = 180^\circ$, $2x + 90 = 180^\circ$

$2x = 180^\circ - 90^\circ$, $2x = 90^\circ$, $x = \frac{90^\circ}{2}$

$\boxed{x = 45^\circ}$

Then find 'y':

According to theorem

$\angle BAD + \angle BCD = 180^\circ$

$(y+20)^\circ + (2y-20)^\circ = 180^\circ$, $y + 2y + 20^\circ - 20^\circ = 180^\circ$

$3y = 180^\circ$, $y = \frac{180^\circ}{3}$

$\boxed{y = 60^\circ}$

verify.

$2x - 5 + 95^\circ = 180^\circ$

$2(45) - 5 + 95^\circ = 180^\circ$

$90^\circ + 90^\circ = 180^\circ$

$180^\circ = 180^\circ$.

$y + 20 + 2y - 20 = 180^\circ$

$3y = 180^\circ$

$3(60) = 180^\circ$

$180^\circ = 180^\circ$.

Q. No. 2 Part (vi)

$\frac{2}{x-1} + \frac{3}{x+1} = 1 \quad x \in R.$

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

$\frac{2x+2+3x-3}{(x-1)(x+1)} = 1, \quad 5x-1 = (x-1)(x+1)$

$5x-1 = x^2-1^2, \quad x0 = x^2-1+1-5x$

$0 = x^2-5x, \quad x^2-5x = 0.$

$a=1, \quad b=-5, \quad c=0.$

$x = \frac{-b \pm \sqrt{b^2-4ac}}{2a}, \quad x = \frac{5 \pm \sqrt{-5^2-4(1)(0)}}{2(1)}$

$x = \frac{5 \pm \sqrt{25-0}}{2}, \quad x = \frac{5 \pm 5}{2}.$

$x = \frac{5+5}{2}, \quad x = \frac{10}{2}, \quad [x=10]. \; [x=5].$

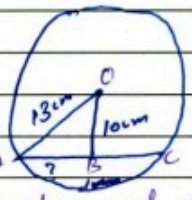
$x = \frac{5-5}{2}, \quad x = \frac{0}{2}, \quad [x=0]$

$[x=0], \quad [x=5].$

Solution. $[x=5, \; x=0]$ Ans.

Q. No. 2 Part (vii)

According to given conditions:-



$AO = 13cm$ (radius)

$OB = 10cm$ (distance between centre and chord)

$AC = ?$ (length of chord).

~~A+B~~ $AB + BC = AC$.

In ΔOBA use pythagoras theorem, it is right triangle.

$(OA)^2 = (OB)^2 + (AB)^2$

$13^2 = 10^2 + (AB)^2$

$(AB)^2 = 13^2 - 10^2$, $(AB)^2 = 169 - 100$

$(AB)^2 = 69$ take Sq root on both side.

$\sqrt{(AB)^2} = \sqrt{69}$, $AB = 8.31cm$.

Length of chord $= AB \times 2$.

$= 8.31 \times 2$

Chord$(AC) = 16.62cm$

Q. No. 2 Part (viii)

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

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

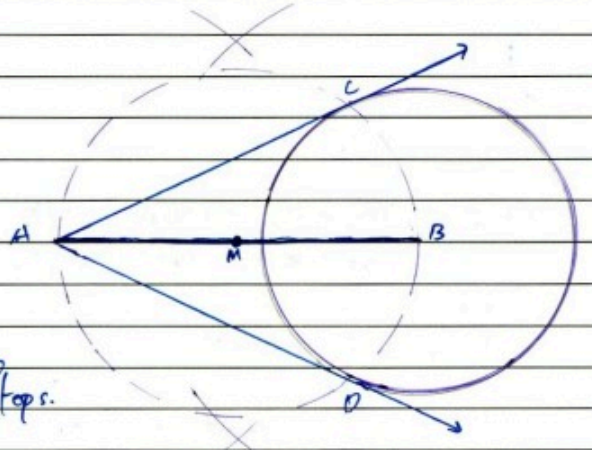
$$\frac{n(n-2)-3(n-2)}{(n-2)(n+2)} \times \frac{n+2}{n(n+3)-2(n+3)}$$

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

$$\Rightarrow \boxed{\frac{(n-3)}{(n-2)(n+3)}} \qquad a^2-b^2=(a-b)(a+b)$$

$$\boxed{\frac{n-3}{(n-2)(n+3)}} \text{ or } \boxed{\frac{n-3}{n^2+n-6}}$$

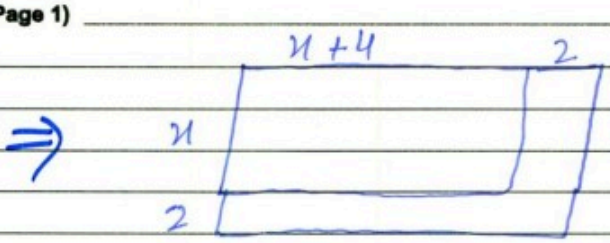
Q. No. 2 Part (ix)



Construction Steps.

⇒ Draw a circle of radius 3 cm.
⇒ Take a point outside the circle away 7cm from centre of circle
⇒ Connect A to B. Take midpoint (right bisector) of $\overline{AB}$.
⇒ Draw a dotted circle of radius MB or AM.
⇒ It will touch the orignal circle at two point (C, D).
⇒ Draw two tangents from $\overrightarrow{AC}$ and $\overrightarrow{AD}$.

Q. No. 3 (Page 1)



⇒ Original width = x

⇒ New width = 2x

⇒ Original length = x+4

⇒ New length = 2x+8

⇒ Area = $64m^2$

⇒ New area = $64 \times 2 = 128m^2$.

Q. No. 3 (Page 2)

⇒ According to condition:-

$(2x+8)(2x) = 128$

$4x^2 + 16x = 128$

$4x^2 + 16x - 128 = 0.$

$4(x^2 + 4x - 32) = 0$

$x^2 + 4x - 32 = 0$

$x^2 + 8x - 4x - 32 = 0$

$x^2 x(x+8) - 4(x+8) = 0.$

$(x-4)(x+8) = 0.$

$x - 4 = 0, \quad x + 8 = 0.$

$x = 4, \quad x = -8.$

⇒ Negative is neglecting So,

⇒ $\boxed{x = 4}$.

Width = $2x = 2(4) = 8m.$

length = $2x+8 = 2(4) + 8$

$= 8 + 8 = 16m.$

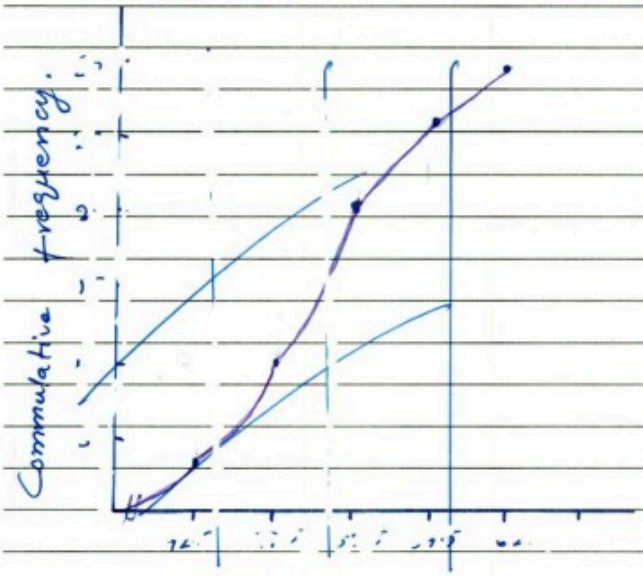
⇒ Width = 8m.

⇒ length = 16m.

Q. No. 4 (Page 1)

Cl	f	Commulative frequency	Classmarks (x)
40-45	4	4+0 = 4	$\frac{40+45}{2}$ = 42.5
45-50	7	4+7 = 11	47.5
50-55	10	11+10 = 21	52.5
55-60	6	21+6 = 27	57.5
60-65	3	27+3 = 30.	62.5

Graph is on graph paper.



Q. No. 4 (Page 2)

Q. No. 5 (Page 1)

$y = x^2 - 1$ — (i)

$y = -x + 3$ — (ii).

Take equation (i)

In equation eq (i) $a = 1$, $b = 0$, $c = -1$.

$a > 0$ So graph (Parabola) will open upward.

$h = \frac{-b}{2a}$, $h = \frac{-0}{2(1)} = 0$.

$k = c - \frac{b^2}{4a}$, $k = -1 - \frac{0^2}{4(1)}$, $k = -1 - 0$

$\boxed{k = -1}$, $\boxed{h = 0}$.

$(h, k) = (0, -1)$

y x-intercept. $\boxed{y = 0}$.

$0 = x^2 - 1$, $x^2 = 1$, $\boxed{x = \pm 1}$.

x	0	1	-1	1.41	-1.41	2	-2	3	-3
y	-1	0	0	1	1	3	3	8	8

Put $x = 1$.

$y = 1^2 - 1$, $y = 1 - 1$, $y = 0$.

Put $y = 1$.,

$1 = x^2 - 1$, $x^2 = 1 + 1$, $x = \pm\sqrt{2}$

Put values of x in eq (ii) $y = -x + 3$.

$x = 0$. $y = 3$. | $x = -1$, $y = 4$.

$x = 1$, $y = 2$ | $x = -2$, $y = 5$.

$x = 2$, $y = 1$

x	0	1	2	-1
y	3	2	1	4

Q. No. 5 (Page 2)

In eq (ii) $y = -x + 3$.

Put $x = 1.56$.

$y = -1.56 + 3$

$y = 1.44$.

In eq (i) put $x = 1.56$

$y = x^2 - 1$.

$y = (1.56)^2 - 1$

$y = 2.43 - 1$

$y = 2.44$

In eq (ii) put $y = -2.56$.

$y = +2.56 + 3$, $y = 5.56$.

In eq (i) put $x = -2.56$.

$y = -2.56^2 - 1$, $y = 6.55 - 1$

$y = 5.56$.

Eq (i) $x = 1.56$ $y = 1.44$

$x = -2.56$ $y = 5.56$.

Eq (ii).

$x = 1.56$ $y = 1.44$

$x = -2.56$ $y = 5.56$.

Point of intersection are:-

$\{(1.56, 1.44), (-2.56, 5.56)\}$ Ans.