(Section B)

Q. No. 2 (i) $\frac{x+1}{x} + \frac{x}{x+1} = \frac{25}{12}$

$\frac{(x+1)(x+1) + (x)(x)}{x(x+1)} = \frac{25}{12}$

$\frac{(x+1)^2 + x^2}{x^2+x} = \frac{25}{12}$

$\frac{(x)^2 + (1)^2 + 2(x)(1) + x^2}{x^2+x} = \frac{25}{12}$

$\frac{x^2+1+2x+x^2}{x^2+x} = \frac{25}{12}$

$\frac{2x^2+2x+1}{x^2+x} = \frac{25}{12}$

$12(2x^2+2x+1) = 25(x^2+x)$

$24x^2 + 24x + 12 = 25x^2 + 25x$

$0 = 25x^2 - 24x^2 + 25x - 24x - 12$

$0 = x^2 + x - 12$

$x^2 + x - 12 = 0$

$x^2 + 4x - 3x - 12 = 0$

$x(x+4) - 3(x+4) = 0$

$(x-3)(x+4) = 0$

$x-3=0$, $x+4=0$

$x=3$, $x=-4$

solution set $= \{3, -4\}$

Q. No. 2 (ii)

$5^{1+x} + 5^{1-x} = 10$

$5^1 \cdot 5^x + 5^1 \cdot 5^{-x} = 10$ $\qquad \because a^b \cdot a^n = a^{b+n}$

$5 \cdot 5^x + 5 \cdot 5^{-x} = 10$

Let $y = 5^x$, then $y^{-1} = 5^{-x}$

so, $\frac{1}{y} = 5^{-x}$

$5 \cdot y + 5 \cdot \frac{1}{y} = 10$

$\frac{5y}{1} \times y + \frac{5}{y} = 10$

$\frac{5y^2 + 5}{y} = 10$

$5y^2 + 5 = 10 \times y$

$5y^2 + 5 = 10y$

$5y^2 - 10y + 5 = 0$

$a = 5, b = -10, c = 5$

$y = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

$y = \frac{-(-10) \pm \sqrt{(-10)^2 - 4(5)(5)}}{2(5)}$

$y = \frac{10 \pm \sqrt{100 - 100}}{10}$

$y = \frac{10 \pm \sqrt{0}}{10}$

$y = \frac{10+0}{10}, \frac{10-0}{10}$

As $y = 1$, so

$y = 5^x$

$1 = 5^x$

$5^0 = 5^x$ $\qquad \because$ as $x^0 = 1$

$x = 0$ $\qquad$ therefore $5^0 = 1$

$S \cdot S = \{0\}$

Q. No. 2 (iii)

$x^2 + (mx+c)^2 = a^2$

$x^2 + (m\cancel{x}+c)^2 - a^2 = 0$

~~$a = 1, b = mx+$~~

$\cancel{x^2 =}\ x^2 + [(mx)^2 + (c)^2 + 2(mx)(c)] - a^2 = 0$

$x^2 + [m^2x^2 + c^2 + 2mcx] - a^2 = 0$

$x^2 + m^2x^2 + c^2 + 2mcx - a^2 = 0$

~~$(m^2)\,x$~~

$x^2(1+m^2) + (2mc)x + c^2 - a^2 = 0$

$a = 1+m^2, \quad b = 2mc, \quad c = c^2 - a^2$

Discriminant $= b^2 - 4ac = (2mc)^2 - 4(1+m^2)(c^2-a^2)$

$Disc. = 4m^2c^2 - 4[1(c^2-a^2) + m^2(c^2-a^2)]$

$Disc. = 4m^2c^2 - 4[c^2 - a^2 + m^2c^2 - m^2a^2]$

$Disc. = \cancel{4m^2c^2} - 4c^2 + 4a^2 - \cancel{4m^2c^2} + 4m^2a^2$

$Disc. = -4c^2 + 4a^2 + 4m^2a^2$

Substitute $c^2 = a^2(1+m^2)$

$Disc. = -4[a^2(1+m^2)] + 4a^2 + 4m^2a^2$

$Disc. = -4[a^2 + m^2a^2] + 4a^2 + 4m^2a^2$

$Disc. = \cancel{-4a^2} - \cancel{4m^2a^2} + \cancel{4a^2} + \cancel{4m^2a^2}$

$Disc. = 0$

As Discriminant "$b^2 - 4ac$" $= 0$, so it is proved that the equation has equal roots.

Q. No. 2 (iv)

$w \propto \frac{1}{z}$

$w = \frac{k}{z}$

$w = 5, z = 7$

a) The equation connecting w and z.

$w = \frac{k}{z}$

$5 = \frac{k}{7}$

$k = 5 \times 7$

$k = 35$

$\boxed{w = \frac{35}{z}}$

b) The value of constant

$w = \frac{k}{z}$

$5 = \frac{k}{7}$

$k = 5 \times 7$

$\boxed{k = 35}$

c) $w = ?, z = \frac{175}{4}$

$w = \frac{k}{z}$

$w = \frac{35}{z}$

$w = 35 \div 175$

$w = 35 \times \frac{4}{175}$

$w = \frac{140}{175}$

$w = 4/5$

Q. No. 2 (v) $\frac{a}{x} = k, \frac{b}{y} = k, \frac{c}{z} = k$

$a = xk, b = yk, c = zk$

~~L.H.S:-~~ ~~R.H.S:-~~

$\frac{x^3}{a^3} + \frac{y^3}{b^3} + \frac{z^3}{c^3} = \frac{3xyz}{abc}$

$\frac{x^3}{(xk)^3} + \frac{y^3}{(yk)^3} + \frac{z^3}{(zk)^3} = \frac{3xyz}{(xk)(yk)(zk)}$

$\frac{\cancel{x^3}}{\cancel{x^3}k^3} + \frac{\cancel{y^3}}{\cancel{y^3}k^3} + \frac{\cancel{z^3}}{\cancel{z^3}k^3} = \frac{3xyz}{k \cdot k \cdot k(xyz)}$

$\frac{1}{k^3} + \frac{1}{k^3} + \frac{1}{k^3} = \frac{3x\cancel{yz}}{k^3 \cdot x\cancel{yz}}$

$\frac{1+1+1}{k^3} = \frac{3}{k^3}$

$\frac{\cancel{3}}{k^3} = \frac{\cancel{3}}{k^3} \Rightarrow \frac{1}{k^3} = \frac{1}{k^3}$

L.H.S = R.H.S,
It is proved

Q. No. 2 (vi) $\frac{3x-2}{2x^2-x}$ proper fraction.

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

Multiplying by $(x)(2x-1)$ on both sides:-

$3x-2 = A(2x-1) + B(x)$

Let's suppose $x=0$

$3(0)-2 = A(2(0)-1) + B(0)$

$0-2 = A[0-1] + 0$

$-2 = A(-1)$

$-2 = -\cancel{1}A$

$A = \frac{\cancel{-}2}{\cancel{-}1}$

$\boxed{A=2}$

$\boxed{3x}-2 = \boxed{2Ax} - A + \boxed{Bx}$

Comparing the ~~constants coefficients~~ coefficients of x.

$3 = 2A + B$

$3 = 2(2) + B$

$3 = 4 + B$

$3 - 4 = B$

$\boxed{B=-1}$

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

Q. No. 2 (vii) $U = W$

$U = \{0, 1, 2, 3, 4 --\}$

$A = \{\ \}$

$B = \{1, 2, 3, 4 ---\}$

(a) A'

$A' = U - A = \{0, 1, 2, 3, 4 --\} - \{\ \}$

$A' = \{0, 1, 2, 3 ---\}$

(b) B'

$B' = U - B = \{0, 1, 2, 3, 4 --\} - \{1, 2, 3, 4 --\}$

$B' = \{0\}$

(c) L.H.S: $(A \cup B)'$

$A \cup B = \{\ \} \cup \{1, 2, 3, 4 --\}$

$A \cup B = \{1, 2, 3, 4 --\}$

$(A \cup B)' = U - (A \cup B) = \{0, 1, 2, 3, 4 --\} - \{1, 2, 3, 4\}$

$(A \cup B)' = \{0\}$ — (i)

R.H.S: $A' \cap B'$

$A' \cap B' = \{0, 1, 2, 3 --\} \cap \{0\}$

$A' \cap B' = \{0\}$ — (ii)

From eq (i) and (ii), it is proved that.

$(A \cup B)' = A' \cap B'$

Q. No. 2 (viii) X in tabular form:-

(a) $X = \{1, 2, 3, 4, 5\}$

Y in tabular form:-

$Y = \{2, 3, 5, 7\}$

(b) $X \times Y = \{1, 2, 3, 4, 5\} \times \{2, 3, 5, 7\}$

$X \times Y = \{(1,2), (1,3), (1,5), (1,7), (2,2), (2,3)$
$(2,5), (2,7), (3,2) (3,3), (3,5), (3,7), (4,2)$
$(4,3), (4,5) (4,7), (5,2), (5,3), (5,5), (5,7)\}$

$n(X) = 5$
$n(Y) = 4$
$n(X \times Y) = 5 \times 4 = 20$

(c) Relation $R = \{(x, y) \mid x + y = 6\}$

$R = \{(1,5), (3,3), (4,2)\}$

$Dom(R) = \{1, 3, 4\}$

$Rang(R = \{2, 3, 5\}$

Q. No. 2 (ix)

class Limits	Frequency	Midpoint (x)	Log x	fLog$x$
4-6	10	$\frac{4+6}{2} = 5$	0.6989	6.989
7-9	20	$7+9/2 = 8$	0.9030	18.06
10-12	13	$\frac{10+12}{2} = 11$	1.0413	13.5369
13-15	7	$\frac{13+15}{2} = 14$	1.1461	8.0227

(a) compute Σf

$\Sigma f = 10+20+13+7$

$\Sigma f = 50$

b) $\Sigma(f \log x)$

$\Sigma f \log x = 6.989 + 18.06 + 13.5369 + 8.0227$

$\Sigma f \log x = 46.6086$

(c) Geometric mean ?

$G.M = \text{Antilog}\left[\frac{\Sigma f \log x}{\Sigma f}\right]$

$G.M = \text{Antilog}\left[\frac{46.6086}{50}\right]$

$G.M = \text{Antilog}\left[0.9321\right]$

$G.M = 8.5526$

Q. No. 2 (x) L.H.S:-

$(\tan\theta + \cot\theta)(\cos\theta + \sin\theta)$

$\tan\theta \cdot \cos\theta + \tan\theta \cdot \sin\theta + \cot\theta \cdot \cos\theta + \cot\theta \cdot \sin\theta$

$\frac{\sin\theta}{\cancel{\cos\theta}} \cdot \cancel{\cos\theta} + \frac{\sin\theta}{\cos\theta} \cdot \frac{\sin\theta}{1\times\cos\theta}{}^{\times\cos\theta} + \frac{\cos\theta}{\sin\theta} \cdot \cos\theta + \frac{\cos\theta}{\cancel{\sin\theta}} \cdot \cancel{\sin\theta}$

$\sin\theta + \frac{\sin\theta + \sin\theta(\cos\theta)}{\cos\theta} + \frac{\cos\theta + \cos\theta(\sin\theta)}{\sin\theta} + \cos\theta$

$\sin\theta + \frac{\sin\theta}{\cos\theta} + \frac{\sin\theta(\cancel{\cos\theta})}{\cancel{\cos\theta}} + \frac{\cos\theta}{\sin\theta} + \frac{\cos\theta(\cancel{\sin\theta})}{\cancel{\sin\theta}} + \cos\theta$

$\sin\theta + \frac{\sin\theta}{\cos\theta} + \sin\theta + \frac{\cos\theta}{\sin\theta} + \cos\theta + \cos\theta$

$\sin\theta + \sin\theta + \cos\theta + \cos\theta + \frac{\sin\theta}{\cos\theta} + \frac{\cos\theta}{\sin\theta}$

$2\sin\theta + 2\cos\theta + \frac{\sin^2\theta + \cos^2\theta}{(\sin\theta)(\cos\theta)}$

$2\sin\theta + 2\cos\theta + \frac{1}{\sin\theta \cdot \cos\theta}$ $\because \sin^2\theta + \cos^2\theta = 1$

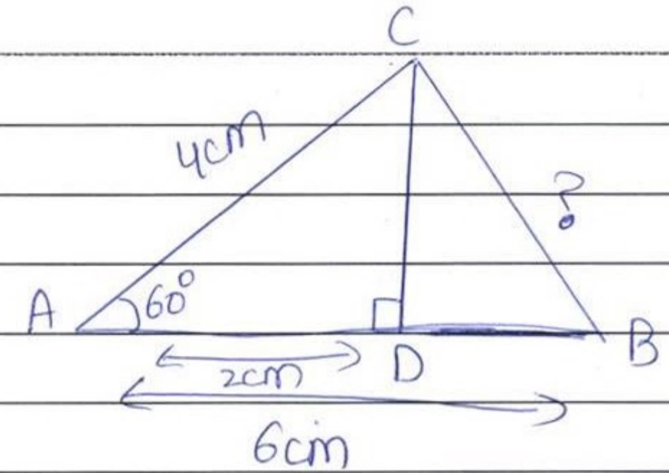
$2\sin\theta + \frac{2\cos\theta(\sin\theta \cdot \cos\theta) + 1}{\sin\theta \cdot \cos\theta}$

$\frac{2\sin\theta(\sin\theta \cdot \cos\theta) + 2\cos\theta \cdot \sin\theta + 2\cos^2\theta + 1}{\sin\theta \cdot \cos\theta}$

$\frac{2\sin^2\theta \cdot 2\sin\theta \cdot \cos\theta + 2\cos\theta \cdot \sin\theta + 2\cos^2\theta + 1}{\sin\theta \cdot \cos\theta}$

$2(\sin^2\theta + \cos^2\theta) \cdot 2\sin\theta\cos\theta + 2\sin\theta\cos\theta + 1 = 2(1) \cdot \sin\theta \cdot \cos\theta\,(2+2)$

Q. No. 2 (xi)



In right angled triangle ADC

$m\overline{AD} = ?$

$\cos\theta = \frac{b}{h}$

$\cos\theta = \frac{m\overline{AD}}{m\overline{AC}} = \frac{m\overline{AD}}{4}$

$\cos 60^\circ = \frac{m\overline{AD}}{4}$

$0.5 \times 4 = m\overline{AD}$

$m\overline{AD} = 2cm$

$(m\overline{BC}) = ?$

In acute angled triangle ABC:-

$(\overline{BC})^2 = (\overline{AC})^2 + (\overline{AB})^2 - 2(\overline{AB})(\overline{AD})$

$(\overline{BC})^2 = (4)^2 + (6)^2 - 2(6)(2)$

$(\overline{BC})^2 = 16 + 36 - 24$

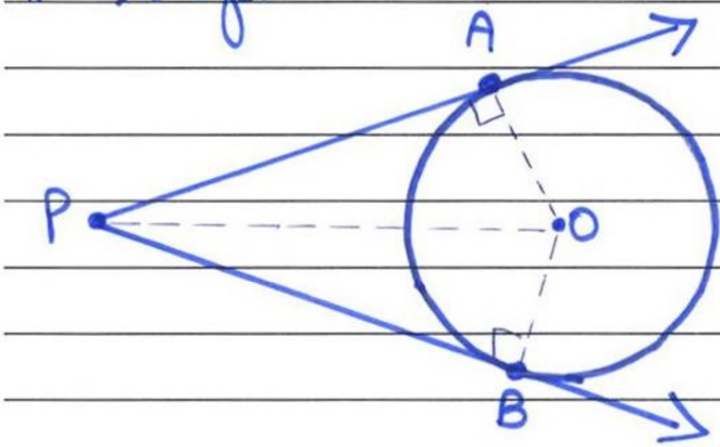
$(\overline{BC})^2 = 52 - 24$

$(\overline{BC})^2 = 28$

$\sqrt{(\overline{BC})^2} = \sqrt{28}$

$mBC = 2\sqrt{7} = 5.29cm$

Q. No. 2 (xii) Prove that two tangents drawn to a circle from a point outside it are equal in length.



Given: A circle with centre O. From an external point P, two tangents $\overrightarrow{PA}$ and $\overrightarrow{PB}$ are drawn to the circle.

To prove: $m\overrightarrow{PA} = m\overrightarrow{PB}$

Construction: Draw $\overline{OA} \perp \overrightarrow{PA}$ and draw $\overline{OB} \perp \overrightarrow{PB}$ and join ~~the~~ O with P, so we have two $\angle rt\ \Delta s$ OAP and BOP.

PROOF:-

Statements	Reasons
In $\angle rt\ \Delta s$ OAP $\leftrightarrow$ BOP	~~theyor~~
$\angle OAP = \angle OBP = 90^\circ$	construction
$m\overline{OP} = m\overline{OP}$	common.
$m\overline{OA} = m\overline{OB}$	Radii of same circle.
$\Delta OAP \cong \Delta BOP$	H.S postulate ($H.S \cong H.S$)
So, $m\overline{PA} = m\overline{PB}$	~~corr~~ corresponding sides of congruent triangles

So, it is proved that $m\overrightarrow{PA} = m\overrightarrow{PB}$.

Q. No. 2 (xiii)

(a) $m\overline{BM} = ?$

In ΔAMO, $\overline{OM} \perp \overline{AB}$ so it is a right angled triangle.

By pythagoras theorem:-

$(\overline{AO})^2 = (\overline{AM})^2 + (\overline{OM})^2$

$(13)^2 = (\overline{AM})^2 + (5)^2$

$169 - 25 = (\overline{AM})^2$

$(\overline{AM})^2 = 144$

$\sqrt{(\overline{AM})^2} = \sqrt{144}$

$m\overline{AM} = 12cm.$

As it is given that $m\overline{AM} = m\overline{BM}$

so, $m\overline{BM} = 12cm.$

b) $m\angle BOM.$

As $\overline{OM} \perp \overline{AB}$ and ΔBMO is a right angled triangle in which $\angle BMO = 90°$, so rest of two angles will be of $45°$.

Because in a right angled triangle, one angle is of $90°$ and other two are of $45°$

So, $m\angle BOM = 45°$

Q. No. 2 (xiv)

$m\overline{AB} = 6cm$.
radius of circle $= 5cm$.
Midpoint of $\overline{AB} = \frac{6}{2} = 3cm$.

~~So~~ We will take this midpoint "M" as centre of the circle.

(Section C)

Q. No. 3 (Page 1/2)

Let x and y be the two digits of a positive integral number.

~~According~~

Let "x" be the digit at ten's place and "y" be the digit at one's place.

According to given condition:-

$x^2+y^2=65$ — (i)

The number is "$10x+y$"

According to given condition:-

$10x+y=9(x+y)$

$10x+y=9x+9y$

$10x-9x=9y-y$

$x=8y$ — (ii)

Put $x=8y$ in eq (i)

$x^2+y^2=65$

$(8y)^2+y^2=65$

$64y^2+y^2=65$

$65y^2=65$

$y^2=65/65$

$y^2=1$

$\sqrt{y^2}=\sqrt{1}$

Q. No. 3 (Page 2/2)

digit at one's place is always positive.
Put $y=1$ in eq (ii)

$x = 8y$
$x = 8(1)$
$x = 8$
The number is $10x+y$

Number $= 10(8)+1$
$= 80+1$
$= 81$

"The number is 81"

Q. No. 4 (Page 1/2) $\frac{4x^2}{(1-x)(1+x^2)^2}$ proper fraction:-

$$\frac{4x^2}{(1-x)(1+x^2)^2} = \frac{A}{1-x} + \frac{Bx+C}{1+x^2} + \frac{Dx+E}{(1+x^2)^2}$$

Multiplying by $(1-x)(1+x^2)^2$

$4x^2 = A(1+x^2)^2 + (Bx+C)(1-x)(1+x^2) + Dx+E(1-x)$

Let suppose $x = 1$

$4(1)^2 = A(1+(1)^2)^2 + Bx+C(1-1)(1+(-1)^2) + Dx+E(1-1)$

$4 = A(2)^2 + 0 + 0$

$4 = 4A$

$A = 4/4$

$\boxed{A=1}$

$4x^2 = A[(1)^2 + (x^2)^2 + 2(1)(x^2)] + Bx+C[1(1+x^2) - x(1+x^2)]$

$+ Dx(1-x) + E(1-x)$

$4x^2 = A[1 + x^4 + 2x^2] + Bx+C[1+x^2-x-x^3]$

$+ Dx - Dx^2 + E - Ex$

$4x^2 = A + Ax^4 + 2Ax^2 + Bx(1+x^2-x-x^3) + C(1+x^2-x-x^3)$

$+ Dx - Dx^2 + E - Ex$

$4x^2 = A + Ax^4 + 2Ax^2 + Bx + Bx^3 - Bx^2 - Bx^4 + C + Cx^2 - Cx - Cx^3$

Q. No. 4 (Page 2/2)

$4x^2 = A + \boxed{Ax^4} + 2Ax^2 + Bx + Bx^3 - Bx^2 - \boxed{Bx^4} + C + Cx^2$
$- Cx - Cx^3 + Dx - Dx^2 + E - Ex$

Comparing coefficients of x^4

$0 = A - B$
$0 = 1 - B$
$0 - 1 = -B$
$\cancel{+}1 = \cancel{+}B$
$\boxed{B = 1}$

comparing coefficients of x^3

$0 = B - C$
$0 = 1 - C$
$0 - 1 = -C$
$\cancel{+}1 = \cancel{+}C$
$\boxed{C = 1}$

Comparing coefficients of x^2

$4 = 2A - B + C - D$
$4 = 2(1) - (1) + 1 - D$
$4 = 2 - \cancel{1} + \cancel{1} - D$
$4 = 2 - D$
$4 + D = 2$
$D = 2 - 4 \Rightarrow \boxed{D = -2}$

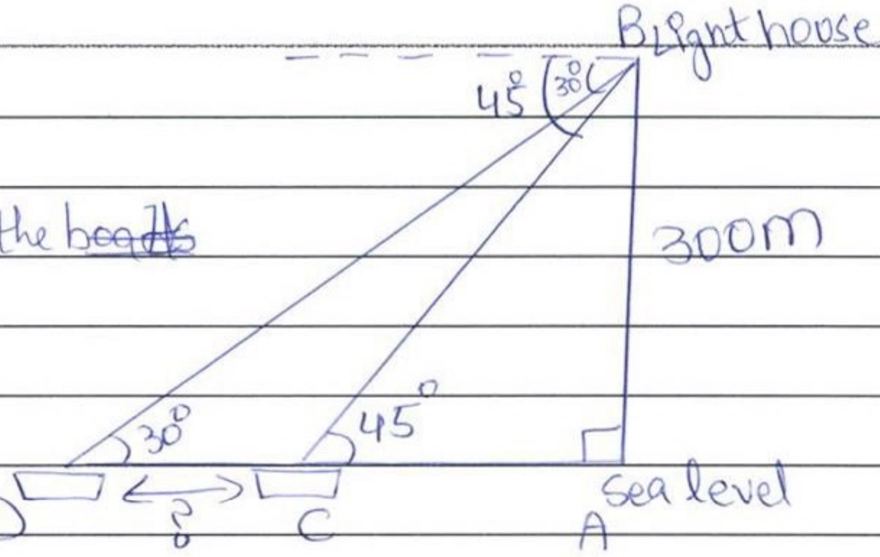
Comparing constants
$0 = A + C + E$
$0 = 1 + 1 + E$
$0 = 2 + E$
$0 - 2 = E$
$\boxed{E = -2}$

So,
$A = 1$
$B = 1$
$C = 1$
$D = -2$
$E = -2$

$$\frac{4x^2}{(1-x)(1+x^2)^2} = \frac{A}{1-x} + \frac{Bx+C}{1+x^2} + \frac{Dx+E}{(1+x^2)^2}$$

$$\frac{4x^2}{(1-x)(1+x^2)^2} = \frac{1}{1-x} + \frac{1x+1}{1+x^2} + \frac{(-2x-2)}{(1+x^2)^2} \Rightarrow \frac{1}{1-x} + \frac{x+1}{1+x^2} - \frac{2(x+1)}{(1+x^2)^2}$$

Q. No. 5 (Page 1/2)



$m\overline{AB} = 300m$

Distance between the ~~boats~~ boats $m\overline{CD} = ?$

In ∠rt ΔACD,

$\tan\theta = \frac{P}{b} = \frac{\overline{AB}}{\overline{AC}}$

$\tan 45^\circ = \frac{300}{AC}$

$1 = \frac{300}{AC}$

$\overline{AC} = 300m$

In ∠rt ΔABD,

$\tan 30^\circ = \frac{\overline{AB}}{\overline{AC} + \overline{CD}}$

$\tan 30^\circ = \cancel{A}\ \frac{300}{300 + \overline{CD}}$

$\tan 30^\circ \times (300 + \overline{CD}) = 300$

$300 + \overline{CD} = \frac{300}{\tan 30^\circ}$

$300 + \overline{CD} = \frac{300}{0.5773}$

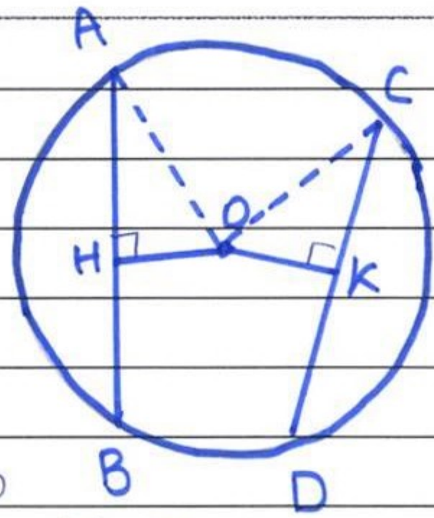
$300 + \overline{CD} = 519.66m$

$m\overline{CD} = 519.66m - 300m = 219.66m$

Q. No. 5 (Page 2/2)

Q. No. 6 (Page 1/2)

Statement: If two chords of a circle are congruent, then prove that they will be equidistant from the centre.



Given: $\overline{AB}$ and $\overline{CD}$ are two chords of a circle with centre O.
$m\overline{AB} = m\overline{CD}$. $\overline{OH} \perp \overline{AB}$ and $\overline{OK} \perp \overline{CD}$

To prove: $\overline{AB}$ and $\overline{CD}$ will be equidistant from centre.

$$m\overline{OH} = m\overline{OK}$$

Construction: Join O with A and C so we have ∠rt ∆s OAH and OCK.

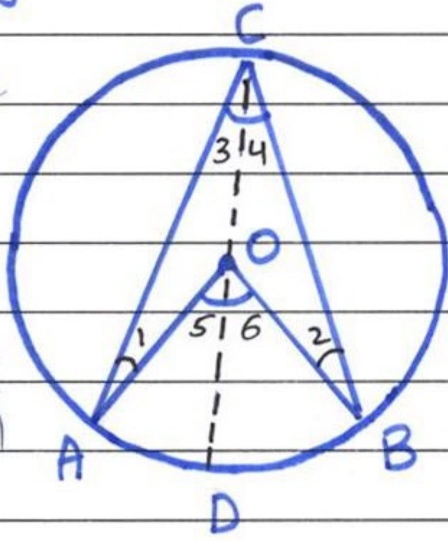
PROOF:-

Statements	Reasons.
$\overline{AB}$ is the chord and $\overline{OH} \perp \overline{AB}$, so $m\overline{AH} = \frac{1}{2}(m\overline{AB})$	$\overline{OH} \perp \overline{AB}$, so $m\overline{AH} = m\overline{BH}$
$\overline{CD}$ is the chord and $\overline{OK} \perp \overline{CD}$, so $m\overline{CK} = \frac{1}{2}(m\overline{CD})$	$\overline{OK} \perp \overline{CD}$, so, $m\overline{CK} = m\overline{KD}$
$m\overline{AH} = m\overline{CK}$	As, $m\overline{AB} = m\overline{CD}$ (Given)
In ∠rt ∆s OHA ↔ OKC	
$m\overline{AH} = m\overline{CK}$	proved
$m\overline{OA} = m\overline{OC}$	Radii of same circle.

Q. No. 6 (Page 2/2)

So, $\Delta OHA \cong \Delta OKC$	$\overline{H.S}$ postulate ($\overline{H.S} \cong \overline{H.S}$)
$m\overline{OH} = m\overline{OK}$	corresponding sides of congruent triangle.
So, it is proved that $\overline{AB}$ and $\overline{CD}$ are equidistant from the centre O.	

Q. No. 7 (Page 1/2) Statement:- Prove that the measure of a central angle of a minor arc of a circle, is double than that of the angle subtended by the corresponding major arc.



Given:- $\overset{\frown}{AB}$ is the minor arc of a circle with centre O. whereas $\overset{\frown}{ACB}$ is the major arc of ~~a~~ circle. $\angle AOB$ is the central angle and $\angle ACB$ is the circum angle.

To prove: $m\angle AOB = 2m\angle ACB$.

Construction: Join C with O and extend it to meet the circle at D.

PROOF:

STATEMENTS	REASONS.
In $\triangle AOC$, $m\angle 1 = m\angle 3$ (i)	$\overline{OA}$ and $\overline{OC}$ are radii of same circle, so $\overline{OA} = \overline{OC}$ and $\angle 1$ and $\angle 3$ are angles opposite to equal sides.
In $\triangle BOC$, $m\angle 2 = m\angle 4$ (ii)	Angles opposite to equal sides "$\overline{OC}$ and $\overline{OB}$".
$m\angle 5 = m\angle 1 + m\angle 3$	Exterior angle is equal to sum of opposite interior angles.
~~$m\angle 5 = m\angle 1 + m\angle 4 + \ldots$~~	(iii)

Q. No. 7 (Page 2/2)

Similarly,	
$m\angle 6 = m\angle 2 + m\angle 4$	Exterior angle is equal to sum of opposite interior angles.
(iv) $m\angle 6 = m\angle 4 + m\angle 4 = 2m\angle 4$	From (ii), $m\angle 2 = m\angle 4$.
$m\angle 5 + m\angle 6 = 2m\angle 3 + 2m\angle 4$	Adding (iii) and (iv)
$m\angle 5 + m\angle 6 = 2(m\angle 3 + m\angle 4)$	
$m\angle AOB = 2m\angle ACB$	$\angle 5 + \angle 6 = \angle AOB$ and $\angle 3 + \angle 4 = \angle ACB$.

Graph Page No. 1

Graph Page No. 2

Rough Work 1

$\alpha+\beta = \frac{-b}{a} = \frac{-q}{p}$

$\alpha\beta = \frac{c}{a} = \frac{2}{p}$

$\alpha+\beta = \frac{1}{\alpha\beta}$

$\frac{-q}{p} = 1 \div \frac{2}{p}$

$-\frac{q}{p} = 1 \cdot \frac{p}{2}$

$\frac{-q}{p} = \frac{p}{2}$

$p^2 = -2q$

$p = \pm\sqrt{2q}$

$\alpha = -\frac{q}{p} - \beta$

$\cancel{\alpha(}$

$\beta\left(\frac{-q}{p} - \beta\right) = \frac{2}{p}$

$\frac{-q\beta}{p} - \frac{\beta^2 \times p}{\times p} = \frac{2}{p}$

$\frac{-q\beta - p\beta^2}{p} = \frac{2}{p}$

$\alpha+\beta = \frac{p}{2}$

$-\frac{q}{p} = \frac{p}{2}$

$-2q = p^2$

$p =$

$\frac{(x+1)^2 + x^2}{x(x+1)} = \frac{25}{12}$

$\frac{x^2+1+2x+x^2}{x^2+x} = \frac{25}{12}$

$\frac{2x^2+2x+1}{x^2+x} = \frac{25}{12}$

$12(2x^2+2x+1) = 25x^2+25x$

$24x^2+24x+1 = 25x^2+25x$

$0 = 25x^2-24x^2+25x-24x-1$

Rough Work 2

$x = \frac{6}{y}$

$x - 4)$

$x = 0 \cdot 4y$

$(x-4)(x+1) = 0$

$\frac{x}{x} = y$

$x(x+1) - 4(x+1) = 0$

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

$x^2 - 3x - 4 = 0$

$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

$x = \frac{-(-3) \pm \sqrt{(-3)^2 - 4(1)(-4)}}{2(1)}$

$= \frac{3 \pm \sqrt{9+16}}{2}$

$10 = \frac{7+9k}{7}$

$= \frac{3 \pm \sqrt{25}}{2}$

$\bar{x} = \frac{\Sigma x}{n}$

$= \frac{3 \pm 5}{2}$

$70 = 7 + 9k$

$63 = 9k$

$X \times Y = 3 \times 2 = 6$

$= \frac{3+5}{2}, \frac{3-5}{2}$

$9k = 63$

2^6

$k,$

$= \frac{\cancel{8}4}{\cancel{2}}, -\frac{\cancel{2}}{\cancel{2}}$

$x = \frac{6}{y}$

$4, -1$

$\frac{x}{x}$

$\frac{1}{\cancel{\sin}} \cdot \frac{\cancel{\sin}}{\cos}$

$a = 8, b = 15, c = 17$

$a^2 + b^2 = 289$

$= \frac{1}{\cos} = \sec\theta.$

$c^2 = 289$