Types of Line

1) Thin ————————— construction

2) thick ————————— outline

3) center line — — — — — —

4) Dotted / Hidden — — — — — —
   line

5) Dimension line ←—————→

Square

72°   72°

60°   60°

A   B
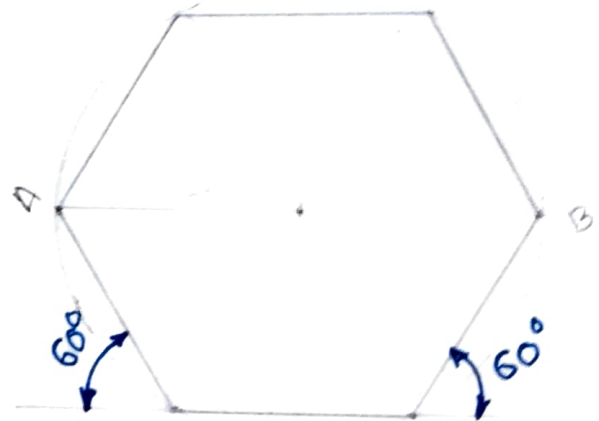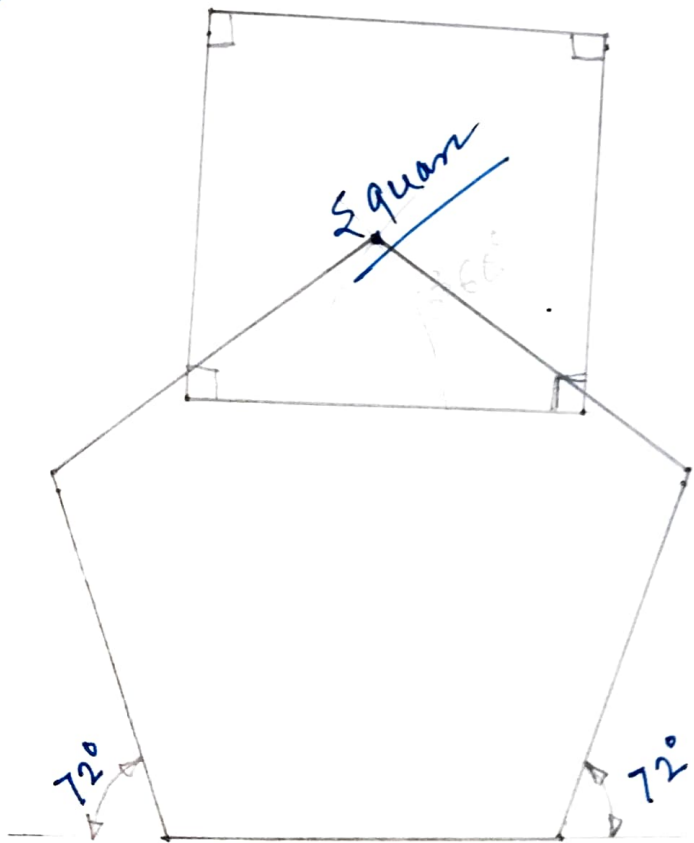
conic section

1) Ellipse - e < 1
2) Parabola - e = 1
3) Hyperbola - e > 1
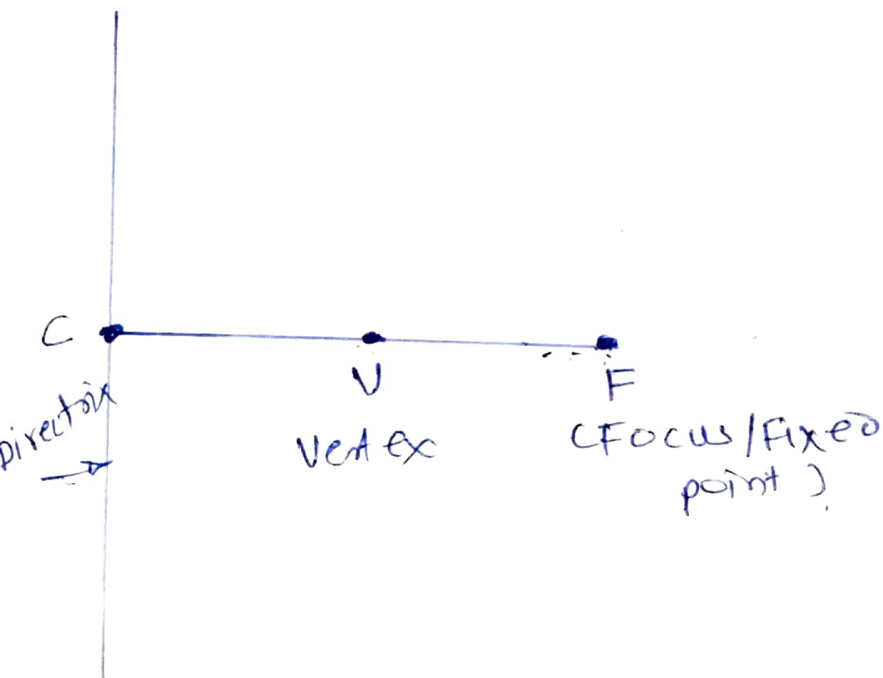
Eccentricity :- It is the ratio of distance b/w vertex & focus to distance b/w vertex and directrix.

$$e = \frac{VF}{VC}$$

Problem :- The distance of F
Draw and name A

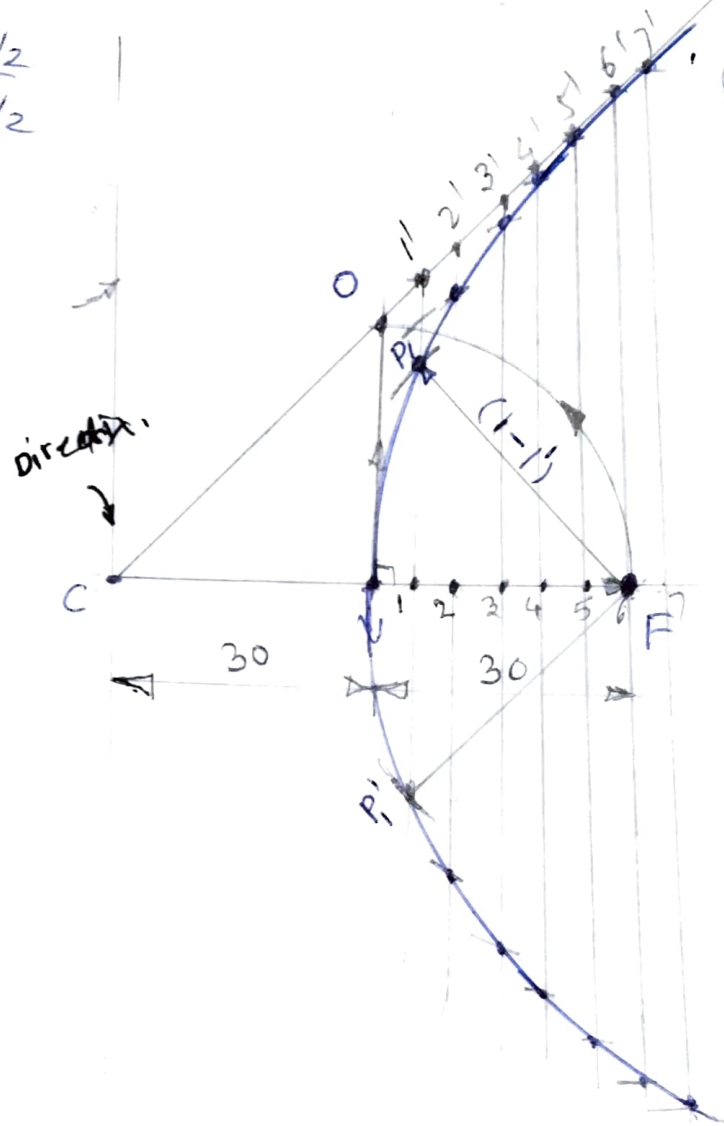$$e = 1 = \frac{VF}{VC} = \frac{60/2}{60/2}$$

$$e = \frac{30}{30}$$

C •————————•————————•
V   F

C
Directrix

V
Vertex

F
(Focus/Fixed point)

Directrix

C

VC

Problem: The distance of Focus from directrix is 60 mm.
Draw and name the curve at eccentricity is one.
$(e = 1)$

$$e = 1 = \frac{vf}{vc} = \frac{60/2}{60/2}$$

$$e = \frac{30}{30}$$

Directrix - Focus
Method

Directrix

O

P₁

(1-1)

C

30

V   1 2 3 4 5 6   F

30

P₁

Problem The distance of focus from directrix is 60 mm. Draw & name the curve if eccentricity is $\frac{2}{3}$.

Solution:-

Given Data $F_s - D_R = 60\ mm$
$$C.F = 60\ mm$$

$e = \frac{2}{3} < 1$ — so ellipse

$$= \frac{VF}{VC} = \frac{2}{3}$$

Let $VF + VC = 2 + 3 = 5$

then divide 60 mm in 5 parts.

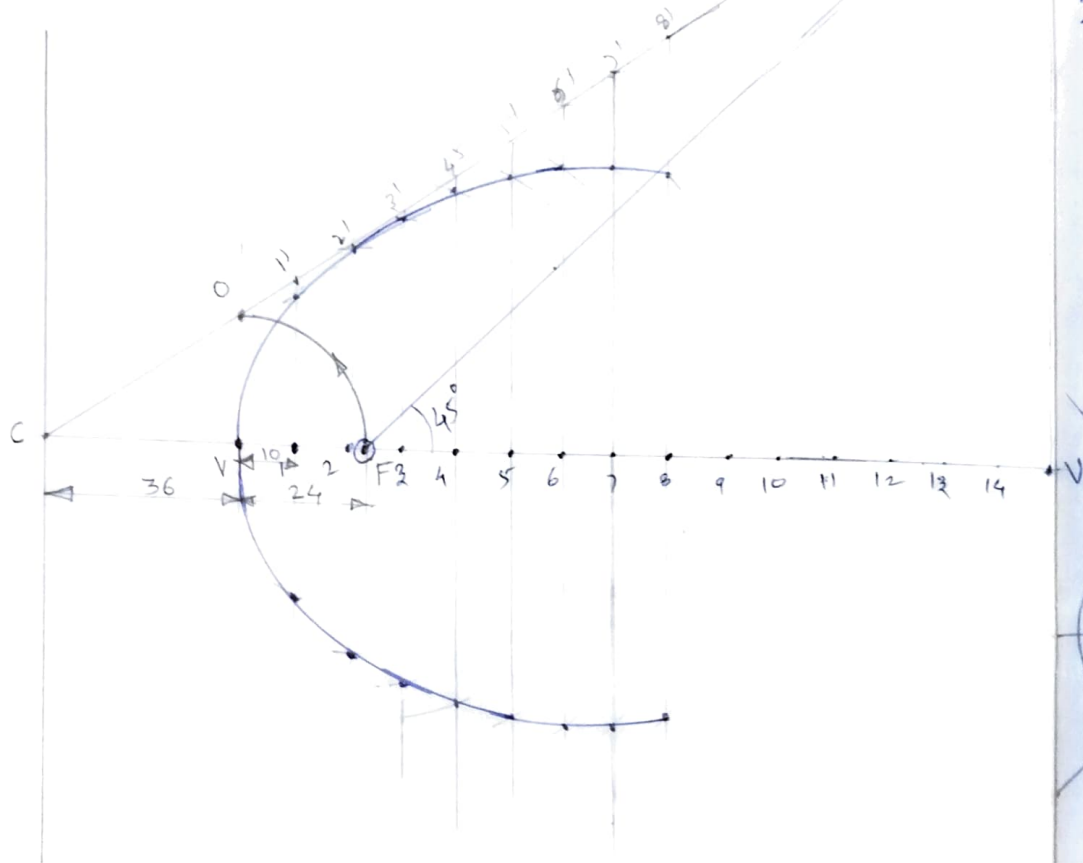$$\rightarrow \frac{60}{5} = 12\ mm$$

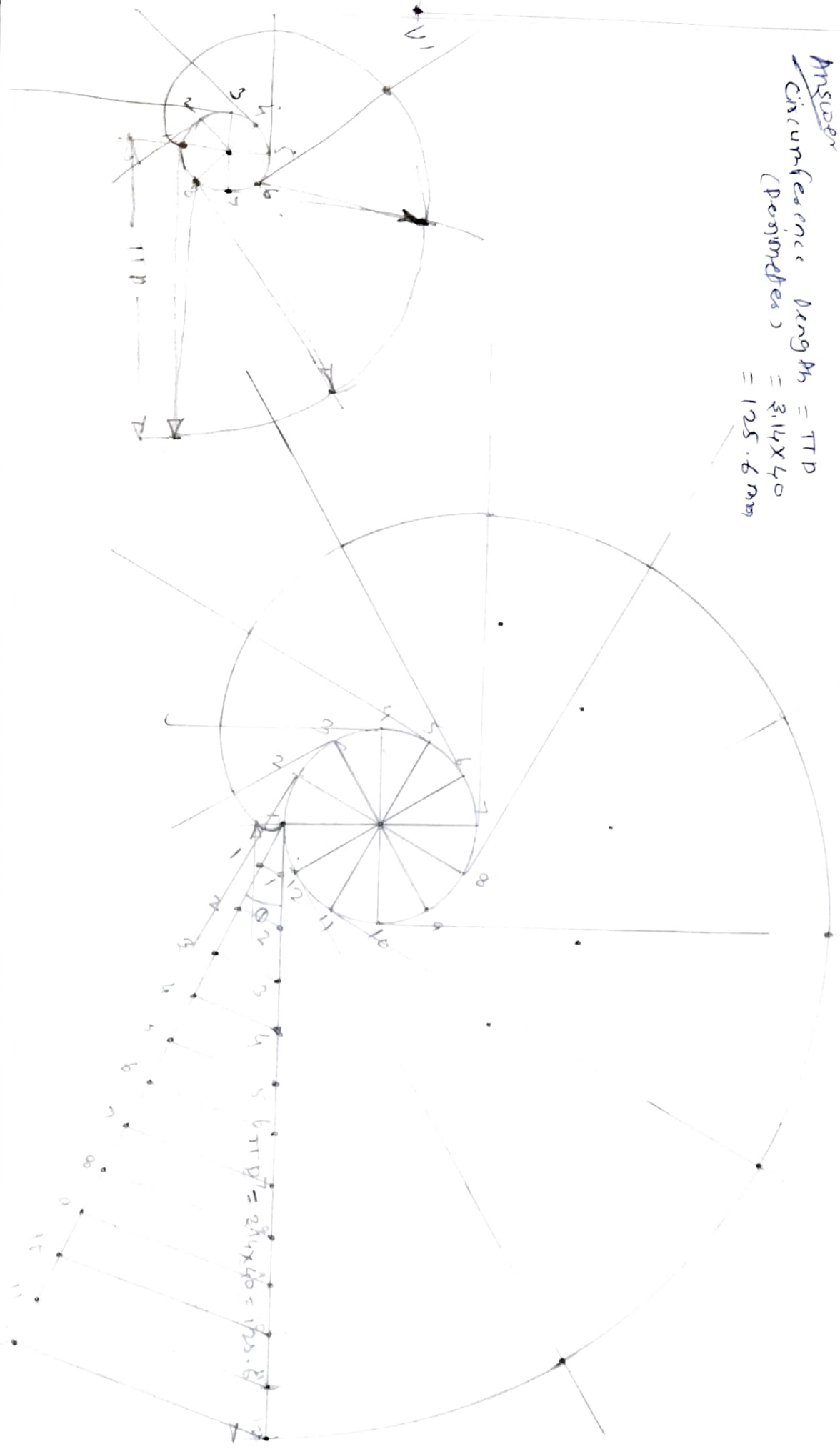then $e = \frac{2 \times 12}{3 \times 12} = \frac{24}{36}$

$VF = 24$
$VC = 36$

$\boxed{\text{ELLIPSE}}$

Involute

Problem:
Draw an involute for circle
of diameter 40 mm.
40 mm.

Answer:
Circumference length = πD
(perimeter) = 3.14×40
= 125.6 mm
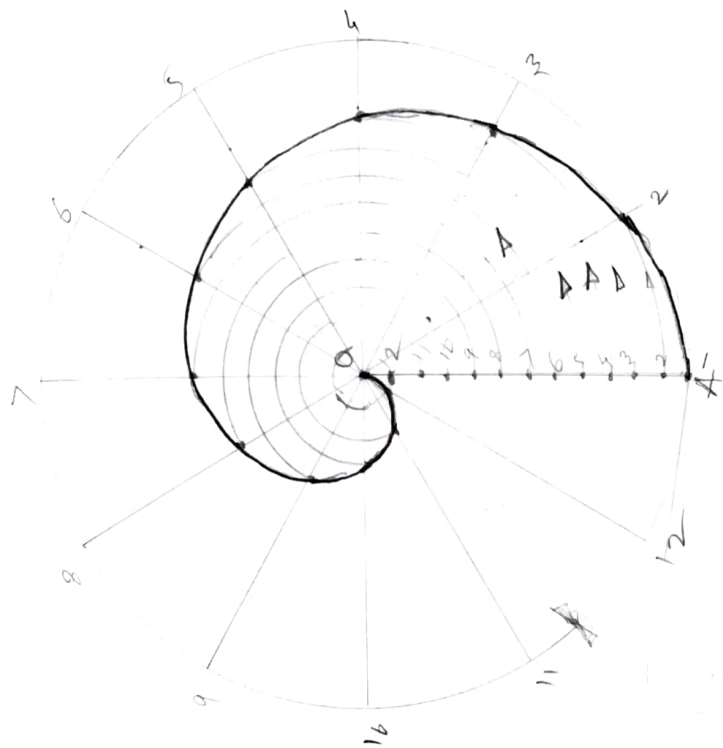

Circumference length = $2 \pi D = 2 \times 3.14 \times 40 = 125.8$

The wheel of 40 mm diameter rolling over Flat surface without slipping. Draw and name the curve traced by point on circumference of wheel in contact with flat surface for one complete revolution.

cycloid

30

30 X

30
Y
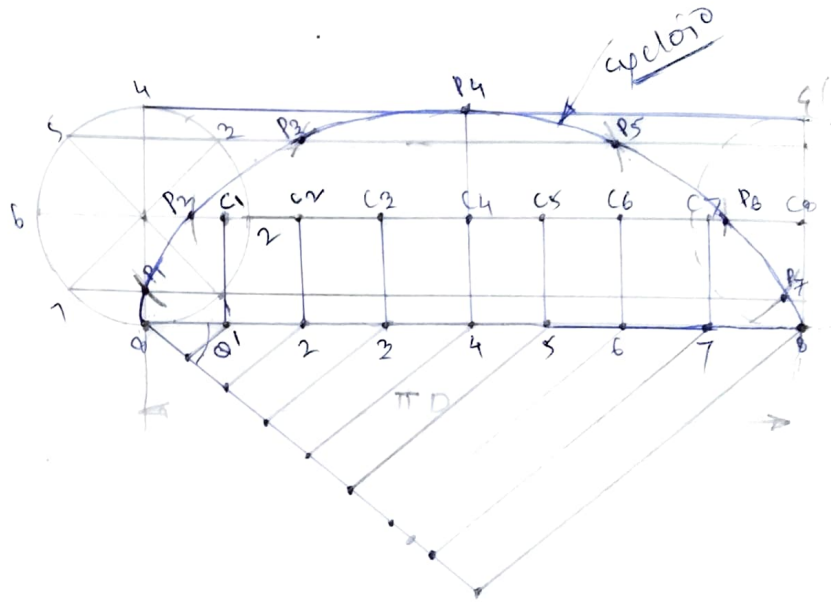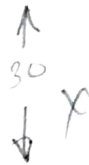
Archimedian spiral

OA = 120 mm, Reduuing scale

Scale → 2:1

120/2 = 60 mm

Helix on cylinder

Scale → 2:1

6/11/2020

FY 5 (E3) Practical
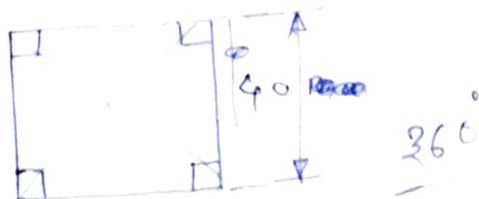
EGR   (10:45 to 12:45)

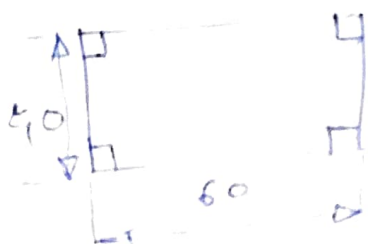Topic →1) Drawing instrument
2) Types of lines
3) System of Dimensioning
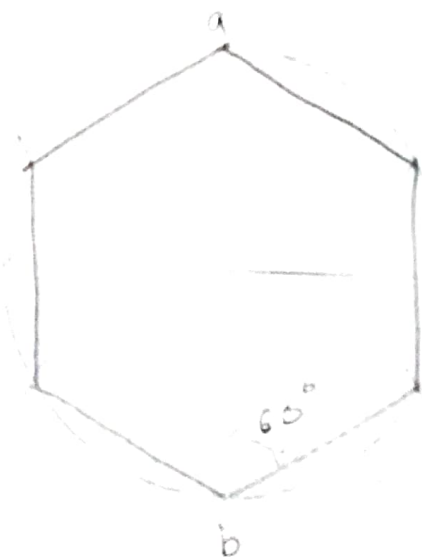4) Basic shapes
4) Introduction to Auto CAD

Square

40 R×40

360°

Rectangle

40

60

Hyperbola

Hexagon

20 mm sides / $\frac{360°}{6}$ = 60°
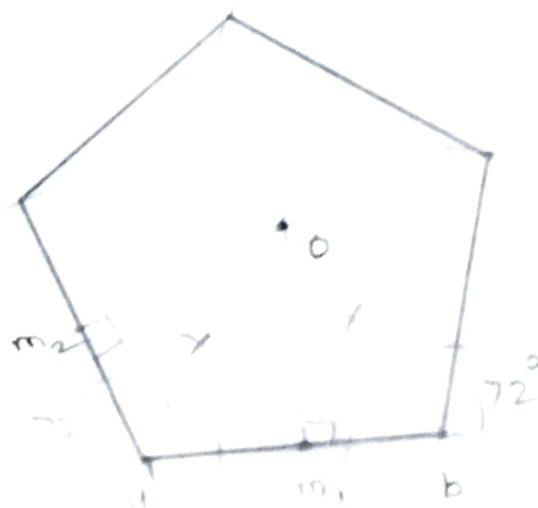
a

60°

b

Pentagon

Size 36 mm $\frac{360°}{5}$ = 72°

o

m₂

x

72°

m₁   b

line,

Dimensioning
apes
on to Auto CAD

Ellipse

Parabola

B A

A

C

A

Hyperbola

B

C

$$\frac{360°}{5} = 72°$$

6 mm

O

72°

m

b
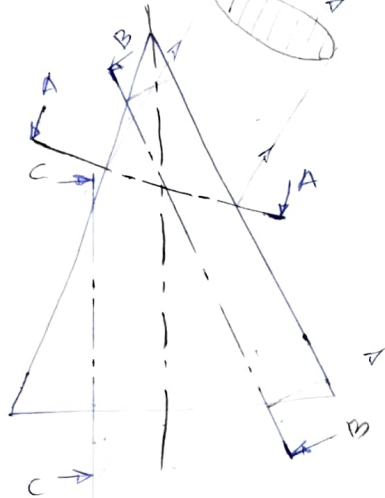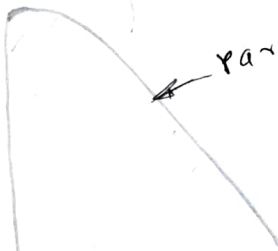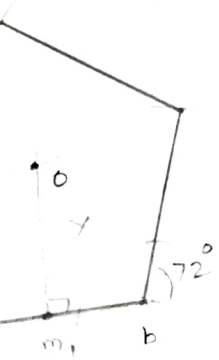
Problem:

The distance of directrix to vertex is 24 mm. and vertex to focus is 36 mm. Draw and name the curve. → given data

CV = 24   VF = 36 — $e = \dfrac{VF}{VC} = \dfrac{36}{24}$ => e > 1 => Hyperbola

$e = \dfrac{3}{2}$

Directrix

C

24

V

P_1 P_2 P_3 P_4
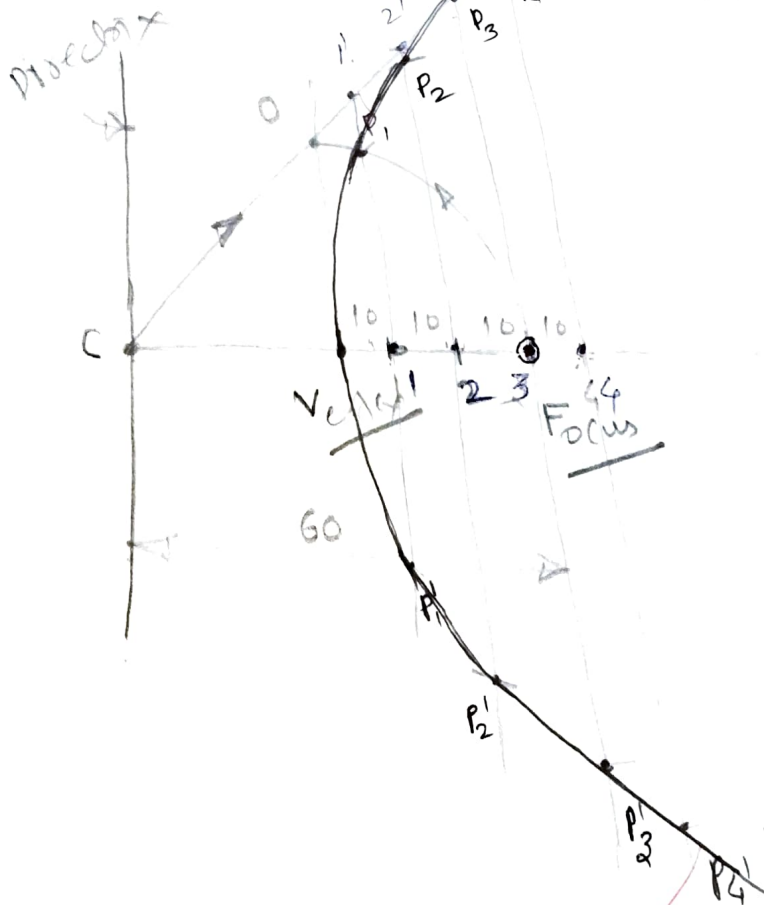
1   2   3   4   F

O
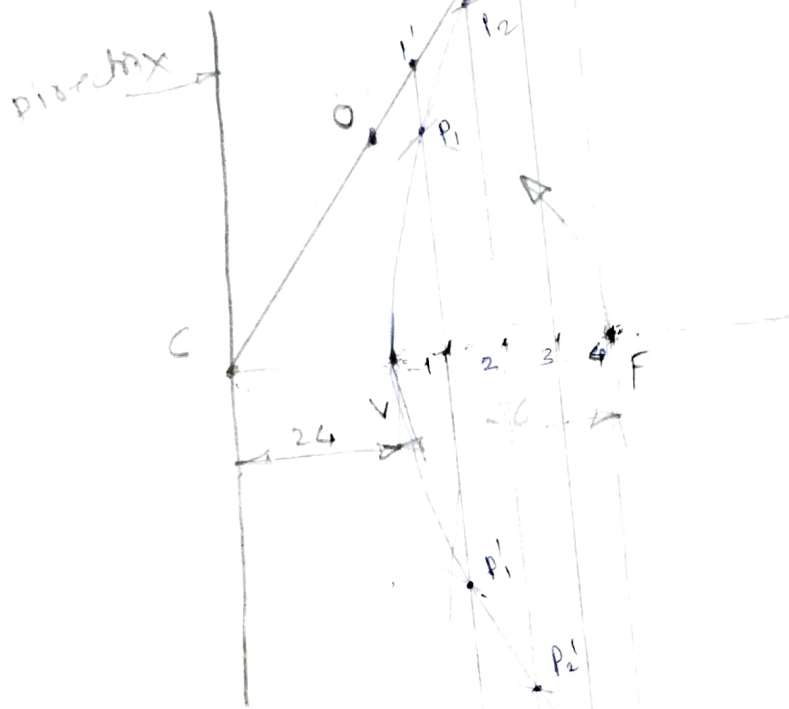
Hyperbola

Parabola

Problem:

The distance of focus from directrix is 60 mm. Draw and name the curve, if e = 1

Ans:
given data :   CF = 60 mm

$$e = \frac{1}{4} = \left(\frac{VF}{VC}\right) = \frac{30}{30}$$

--- curve is ⟹ Parabola

Directrix

C

O

3'
2'
1'

P₃
P₄
P₂
P₁

10 10 10 10

Vertex 1' 2 3 44
Focus

60

P₂'
P₃'
P₄'

Parabola

P.

C