

PROBLEM SET 3

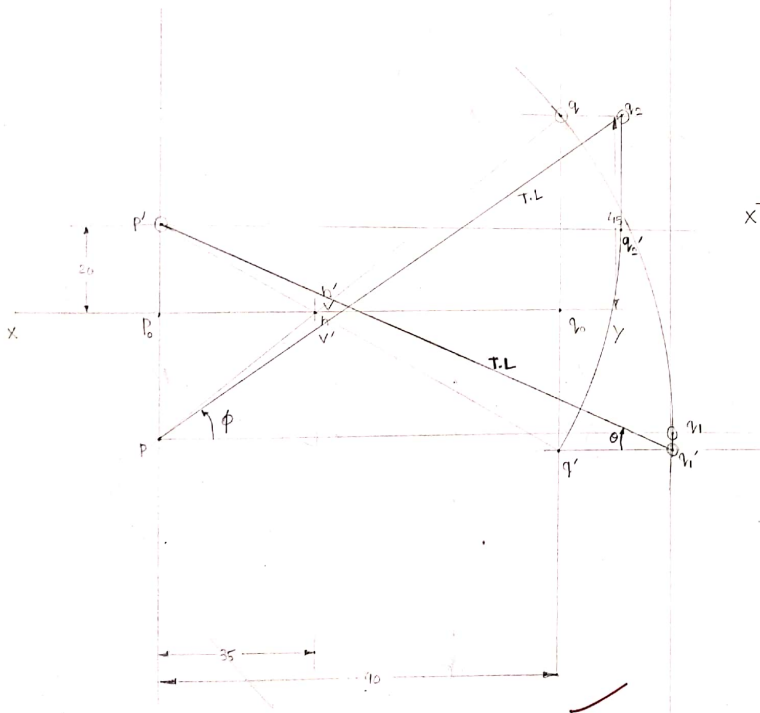
1 m = 100 mm 1:100 scale \Rightarrow 1 m = 100 mm = 10 cm

- 5) Projectors PQ distance = 90 mm
 $P \rightarrow$ 20 mm above HP \Rightarrow HT & VT coincide
 $Q \rightarrow$ 45 mm behind VP on XY \Rightarrow KV = 0 mm
 and projected distance (end P) & other = 35 mm
 TL = (?) θ , ϕ = (?)

T.L = 127 mm

$\theta = 24^\circ$

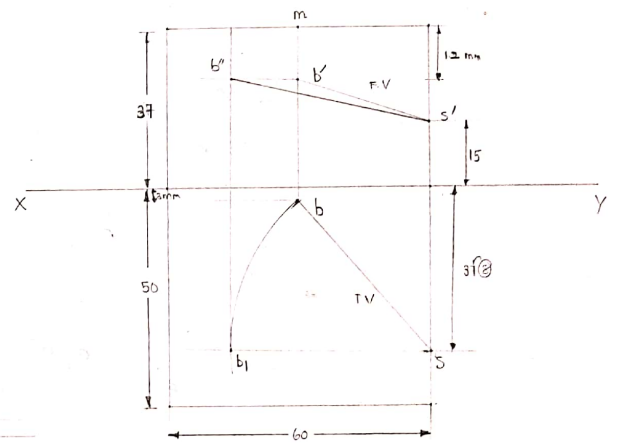
$\phi = 55^\circ$



- 6) Room: 60 x 50 x 37 m. Light \uparrow centre, 12 mm \downarrow ceiling
 Bulb 3 mm \rightarrow away wall switch \rightarrow adjacent wall

$b' =$ F.V of light bulb

$s'b'' =$ Shortest distance = [46 mm]

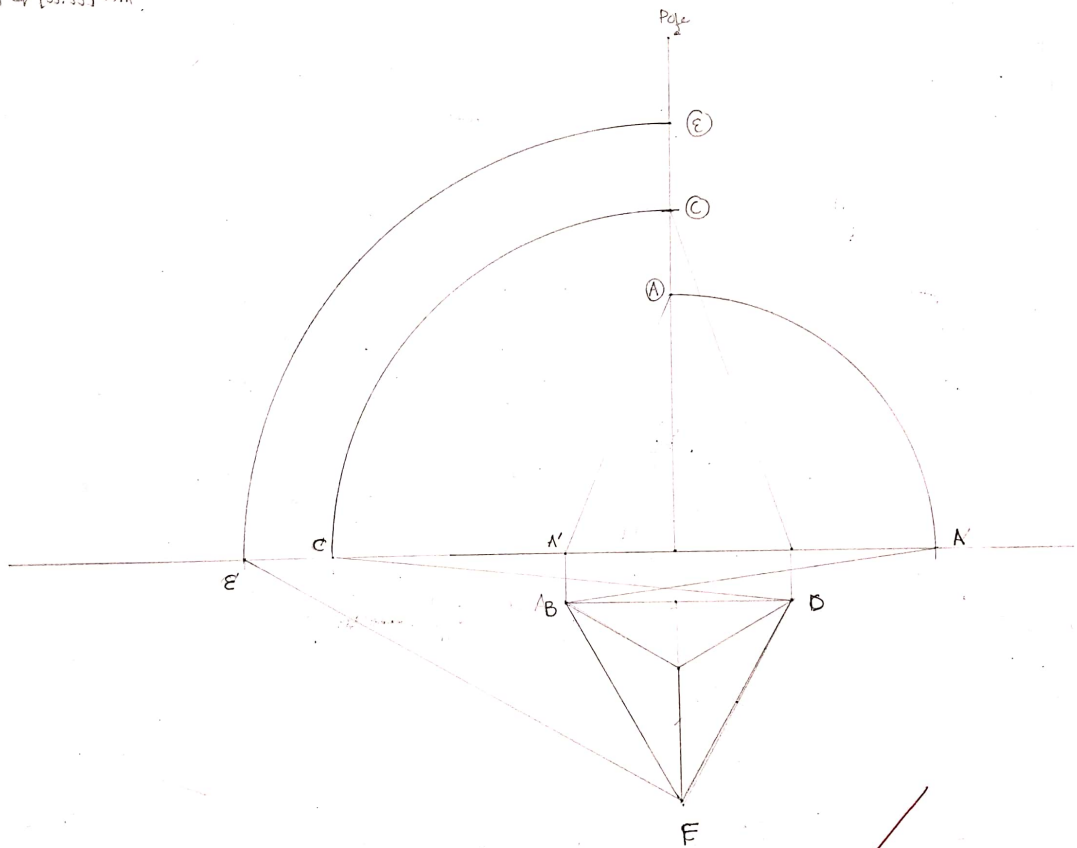


7.7 Vertical pole height = 18 m
 $\Rightarrow 120 \text{ mm}$

$$\frac{1}{150} = \frac{(?) \text{ mm}}{(18) \times 1000 \text{ mm}}$$

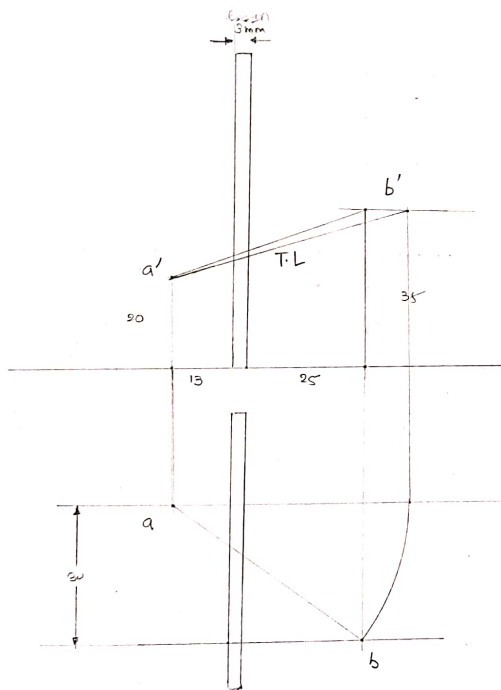
Side of equilateral $\Delta m \Rightarrow [53.33] \text{ mm}$.

AB = 86 mm
CD = 107 mm
EF = 115 mm



2R cos 30 = 33

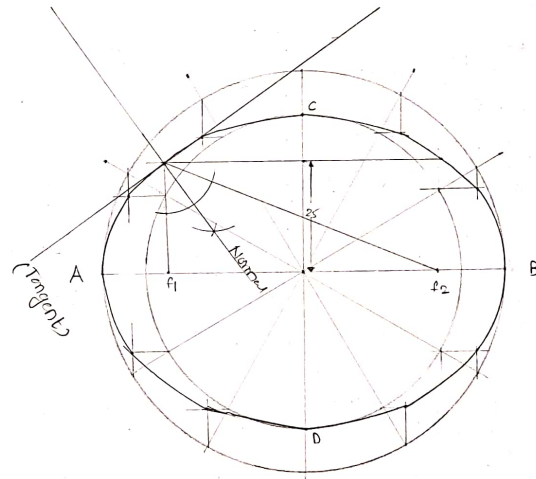
8.7



Real Distance between centres = 53 mm

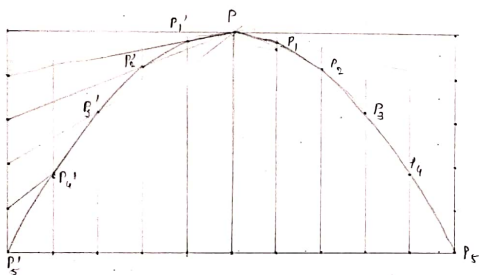
PROBLEM SET 4

$$\begin{aligned}
 1 & \quad b^2 = a^2(1 - e^2) & 15 &= a(1 - e) \\
 b^2 &= (45)^2(1 - e^2) & \frac{1}{3} \cdot 15 &= 45(1 - e) & e &= \frac{2}{3} \\
 &= (45)^2 \left(1 - \frac{4}{9}\right) \\
 b^2 &= \frac{(45)^2 \cdot (5)}{\sqrt{9}} \Rightarrow \frac{9^2 \times 5^2 \times 5}{15 \times \frac{1}{3}} = \left(\frac{15}{3} \sqrt{5}\right) = 33.54
 \end{aligned}$$

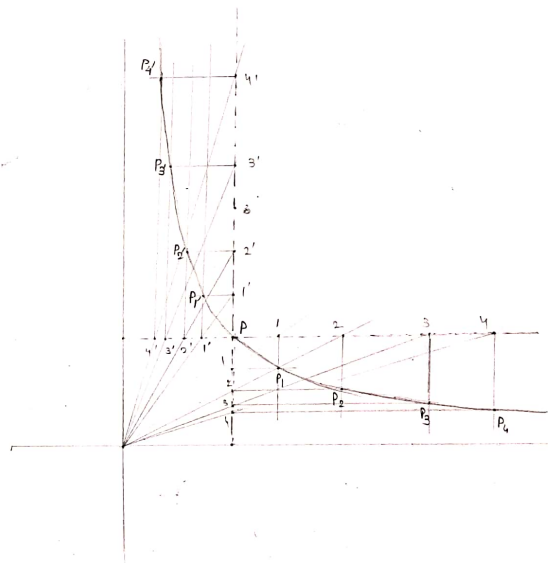


ellipse

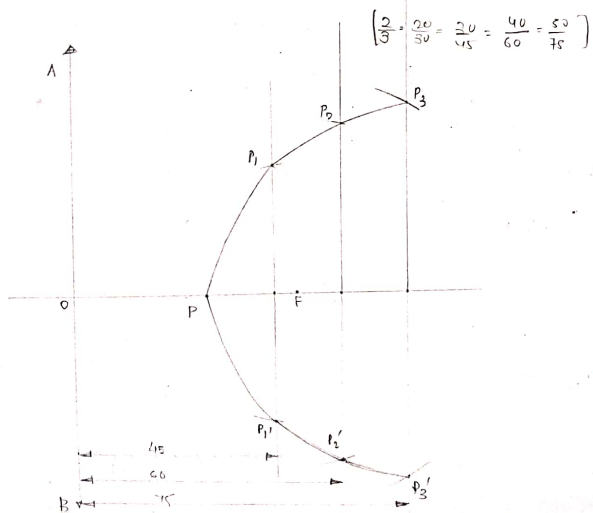
2) $H_{max} = 5m$ $1m = 10mm$
 Range = 10m
 Trace path of ball \rightarrow Projectile



4) Rectangular Hyperbola at (25, 25)

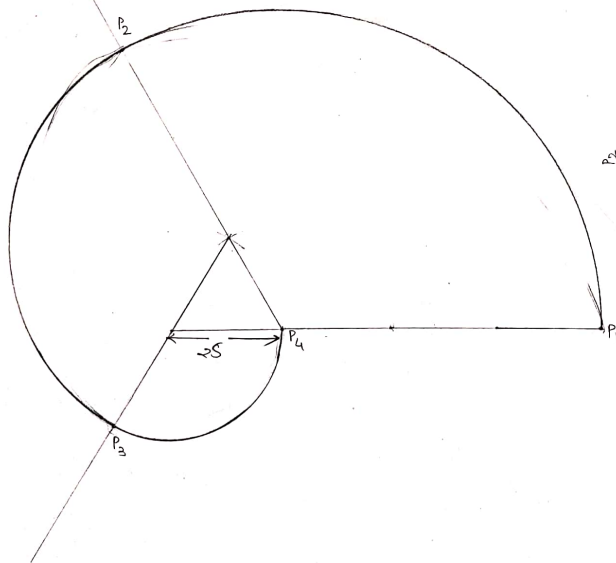


3)



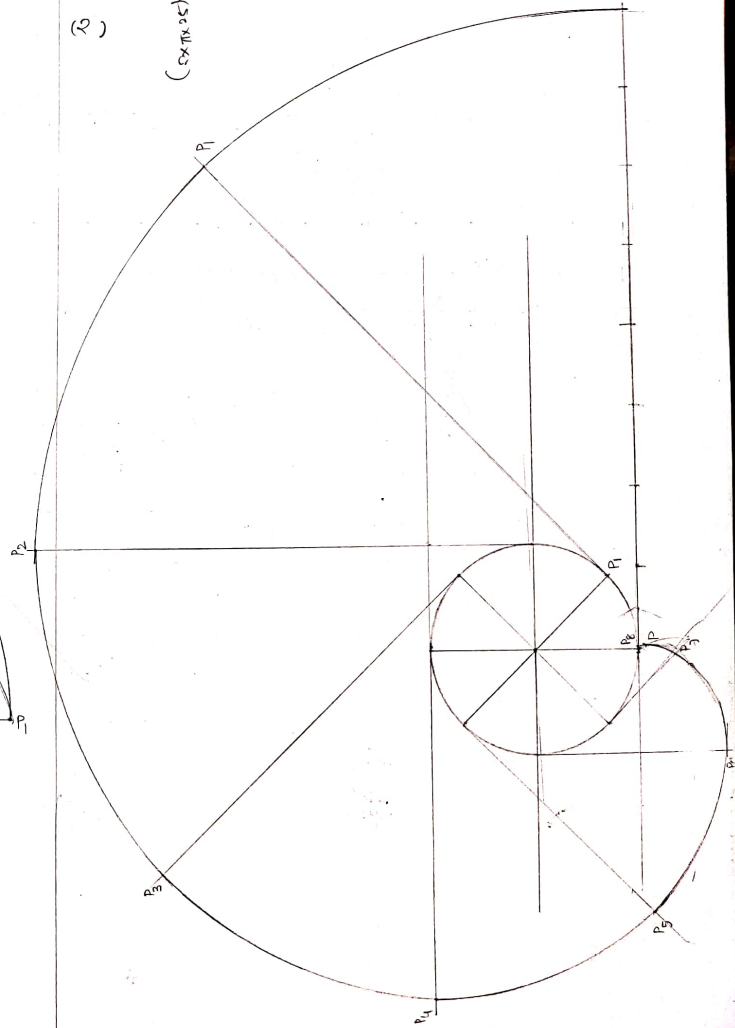
PROBLEM SET 5

(1)

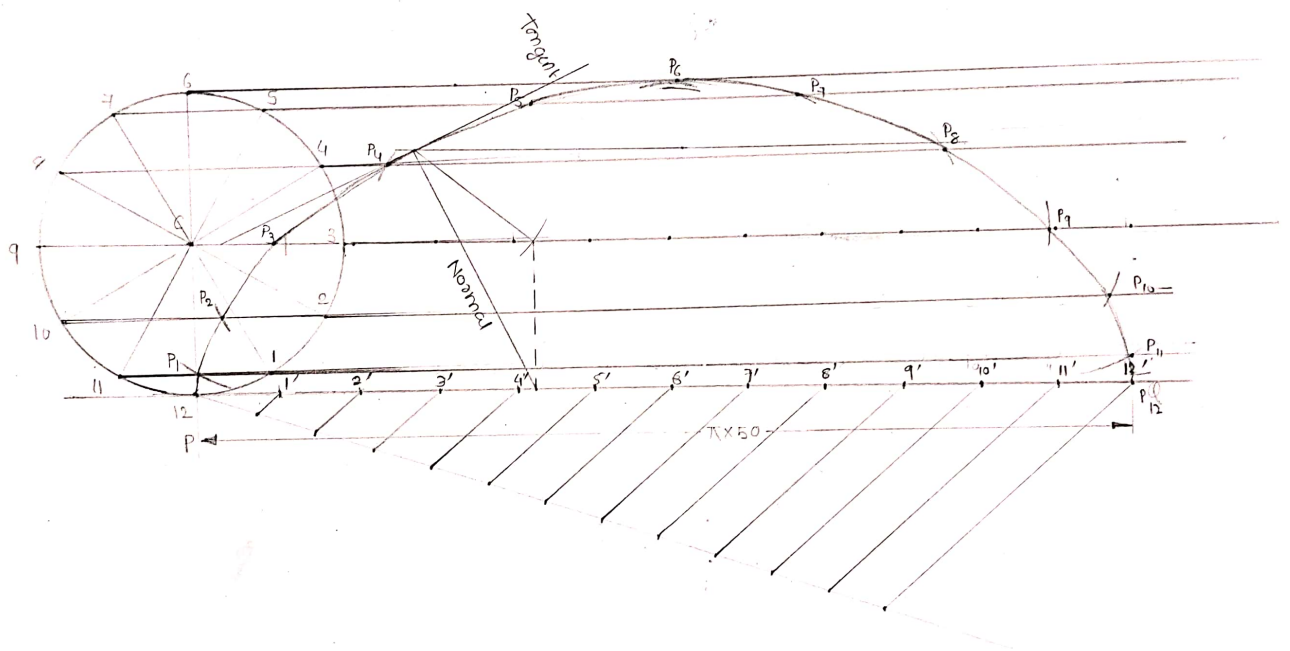


(2)

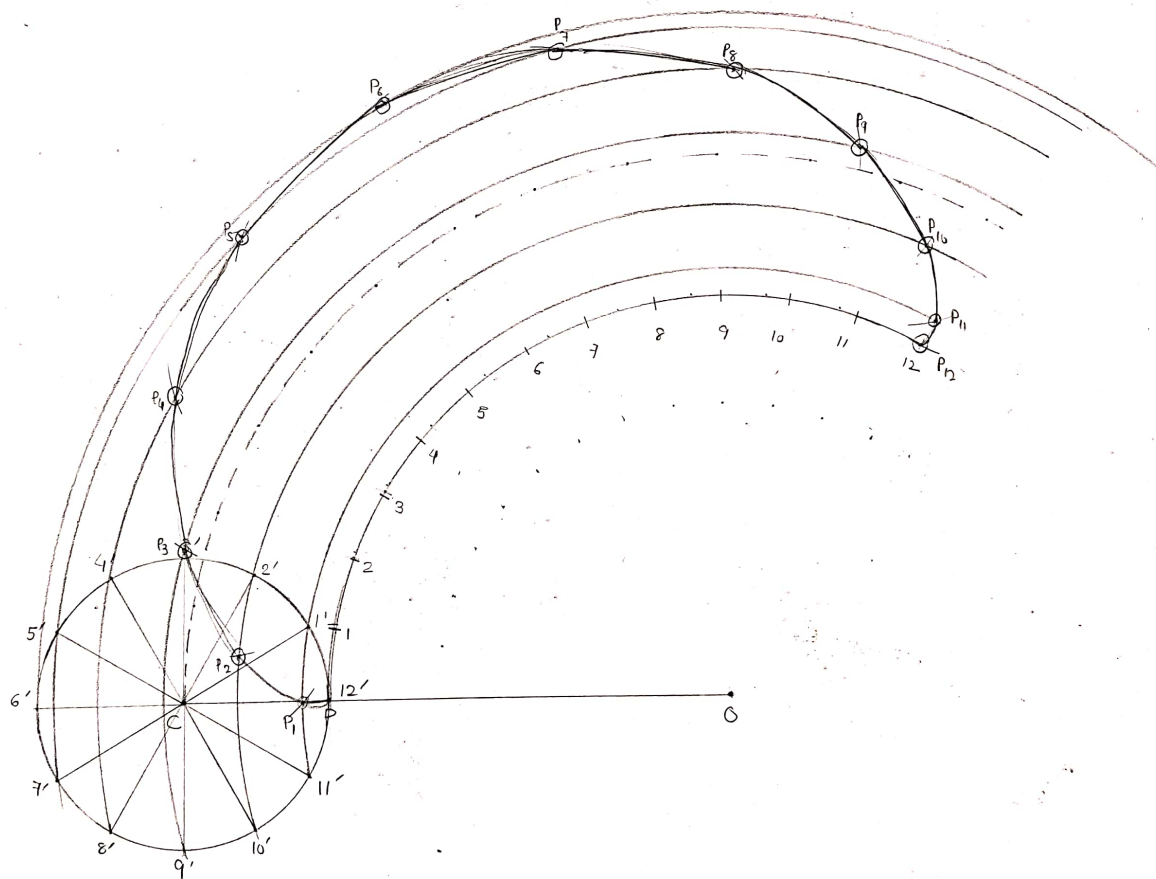
(continued)

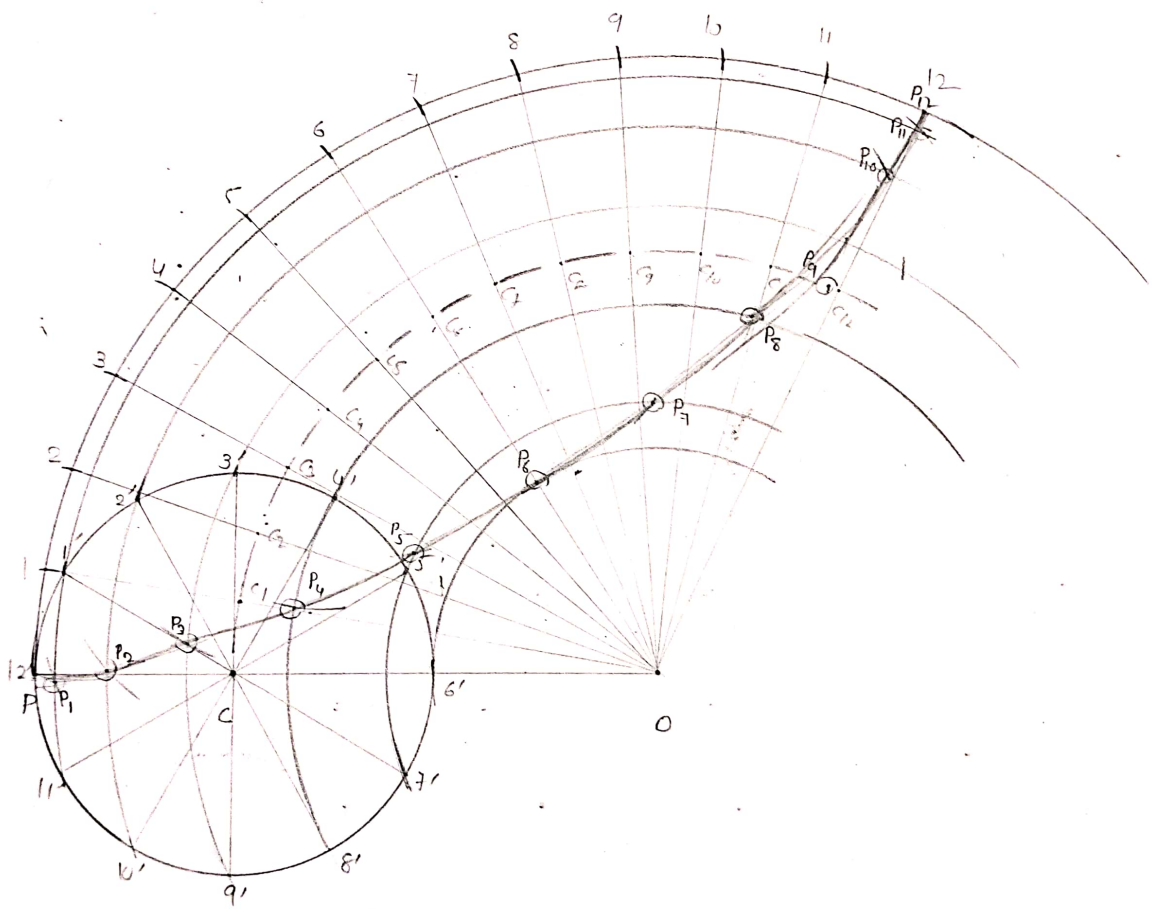


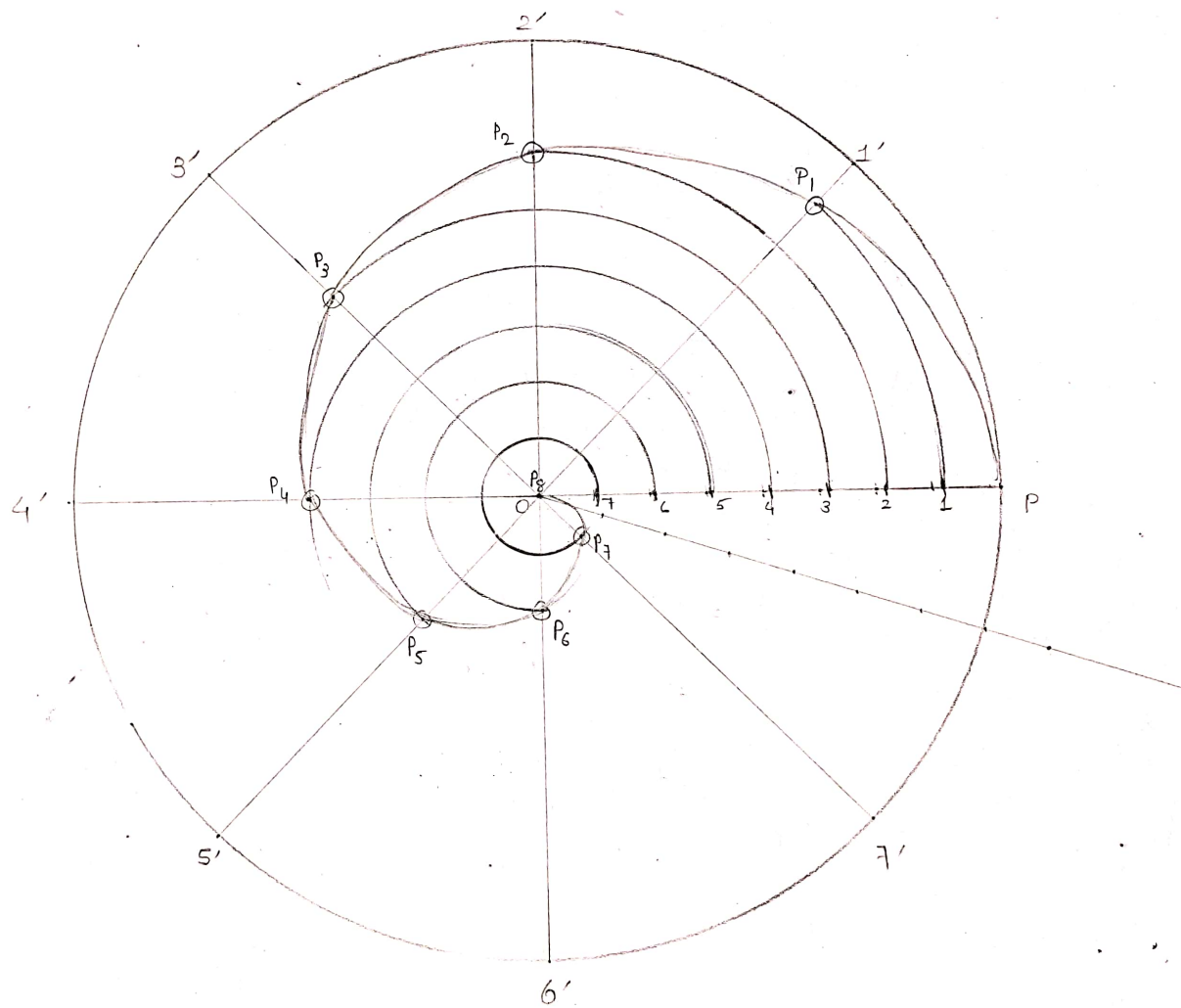
3



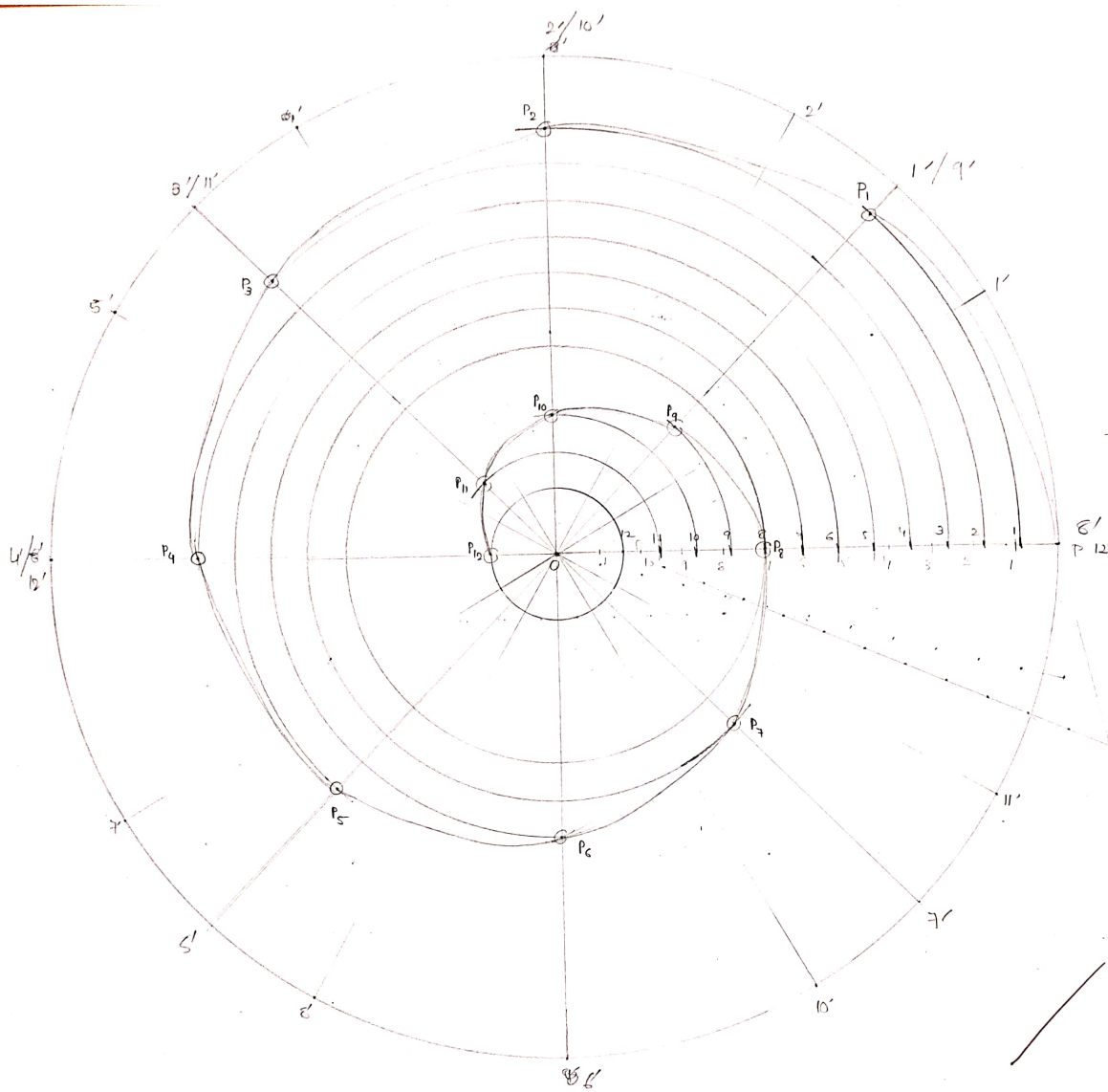
4



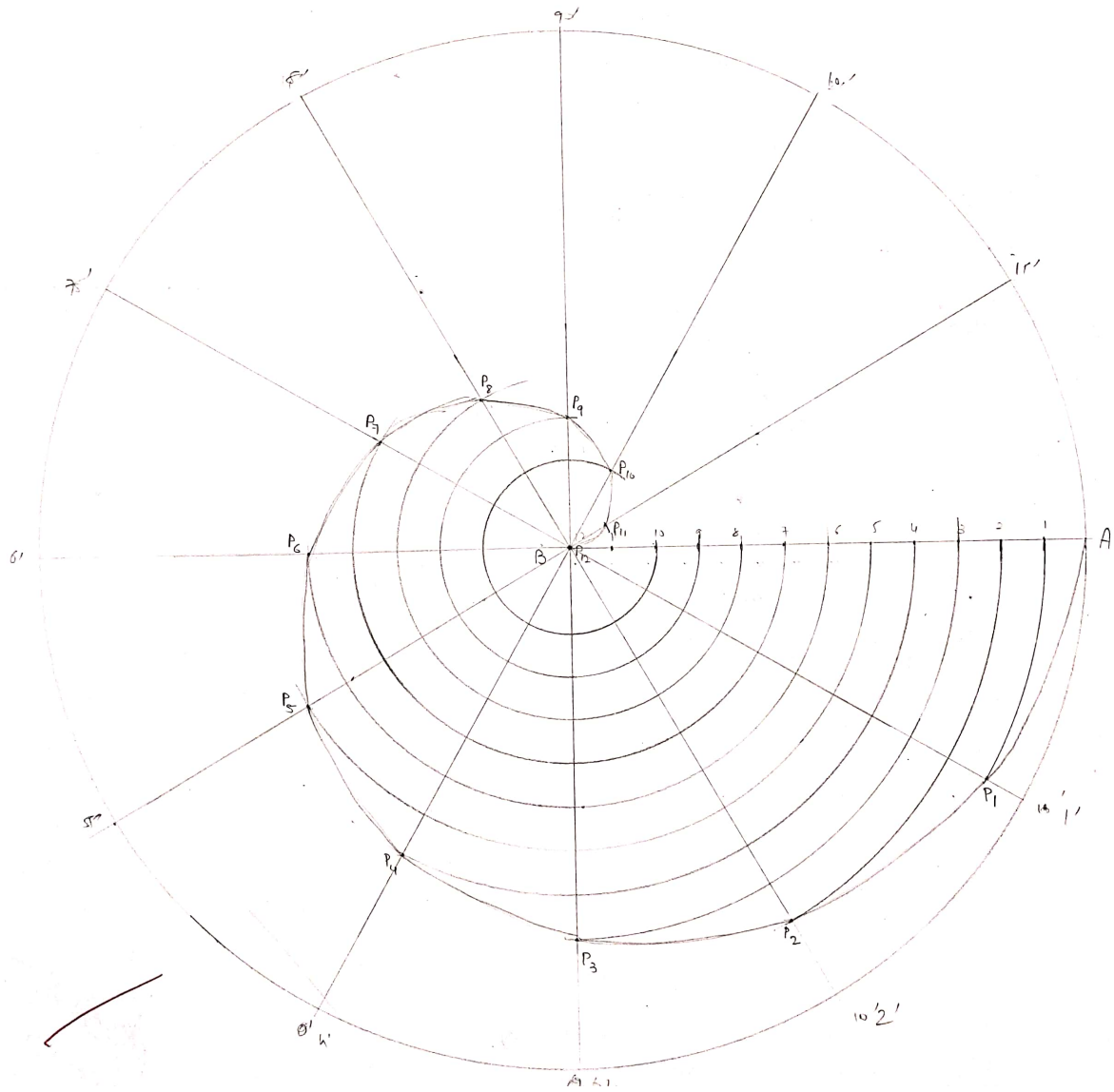




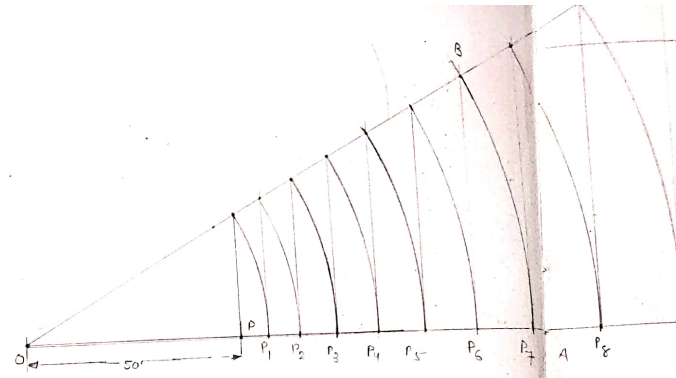
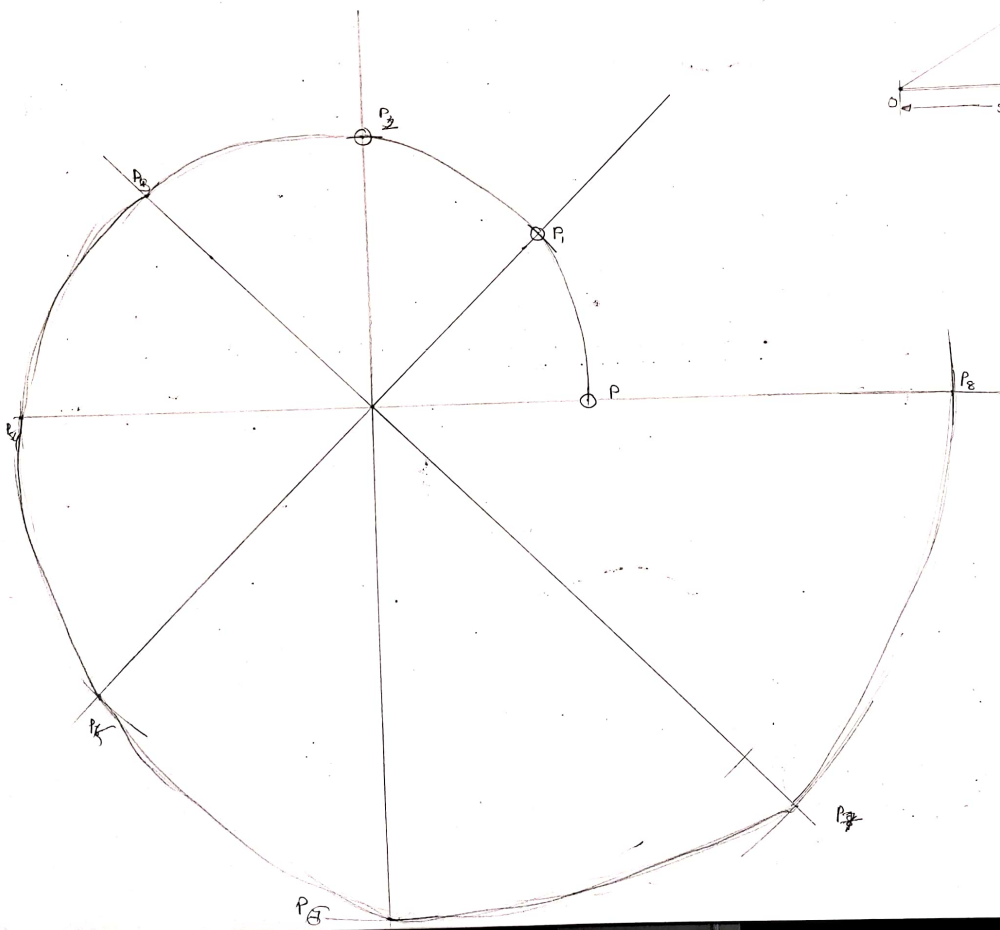
7



8



9



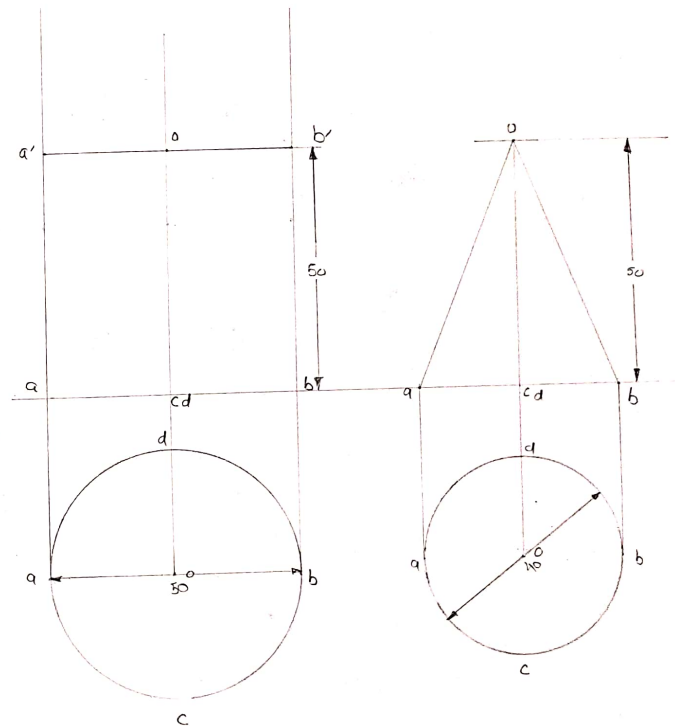
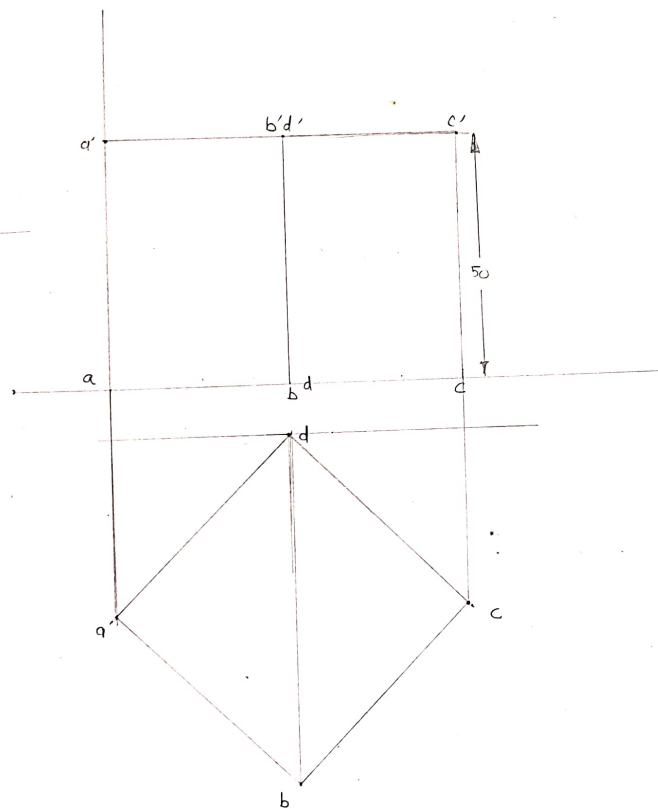
18/11/2019

PROBLEM SET 7

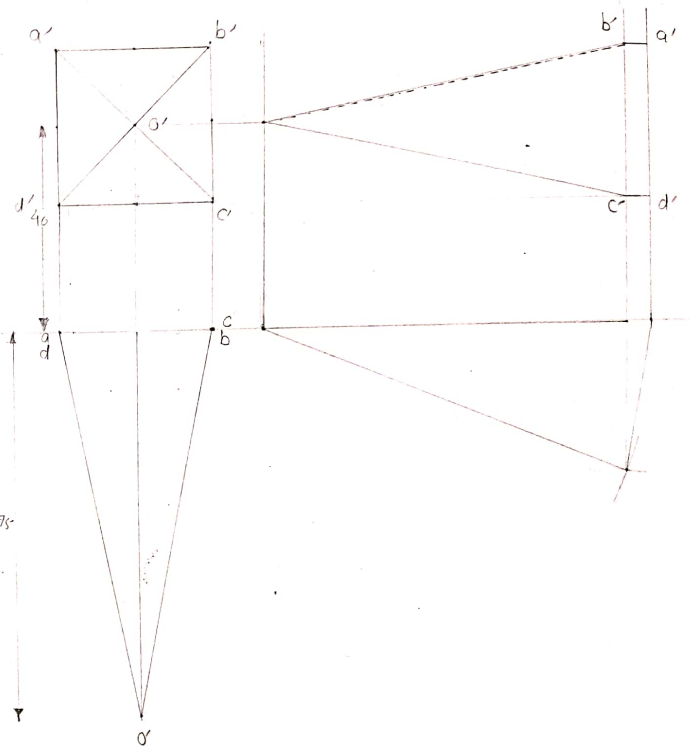
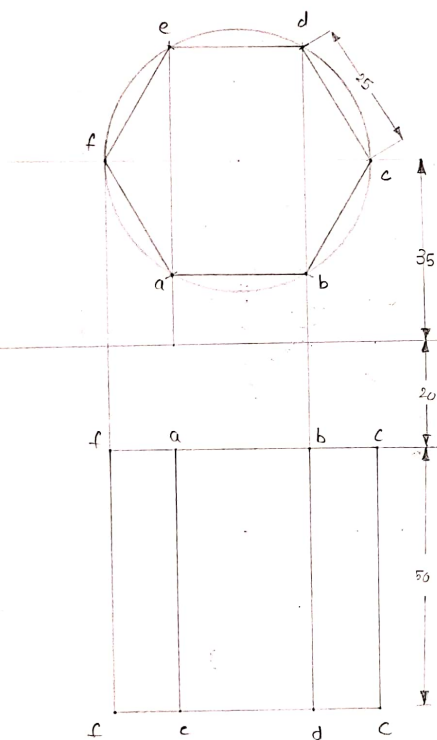
1. >

2. > (a)

(b)



4.



$5 >$

67

