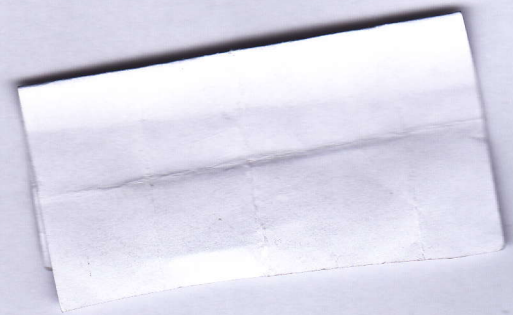
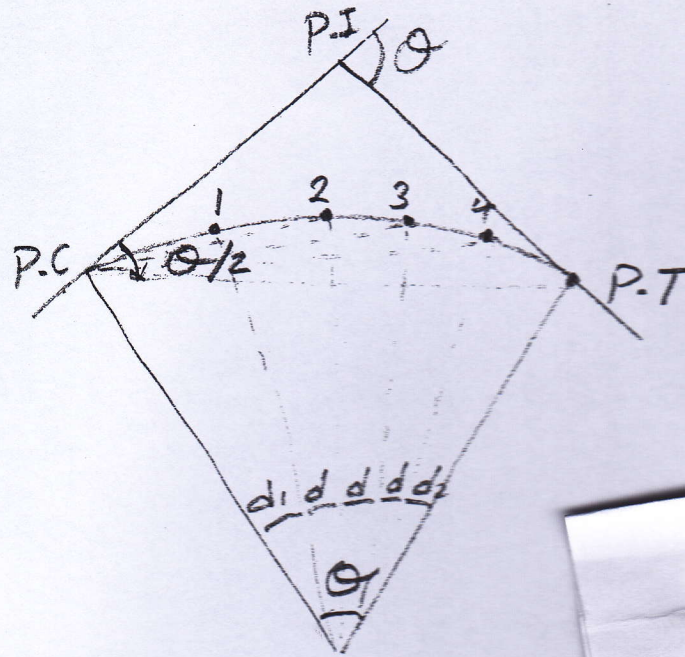


(1)

Setting out a simple circular curve by measuring angle and distance (theodolite and tape)



Example/ Two tangents intersected at 1190 m with deflection angle 36° . Calculate all necessary data for setting out a simple circular curve with $R = 300\text{m}$. Use deflection angle method with using pegs at 30 m interval.

(2)

Sol. $T = R \tan \frac{\theta}{2} = 300 \tan \frac{36^\circ}{2} = 97.48 \text{ m}$

$$L = R * \theta * \frac{\pi}{180} = 300 * 36 * \frac{\pi}{180} = 188.50 \text{ m}$$

$$P.C = P.I - T = 1190 - 97.48 = 1092.52 \text{ m}$$

$$P.T = P.C + L = 1092.52 + 188.50 = 1281.02 \text{ m}$$

0, 30, 60, -----, 1080, 1110, 1140, 1170, 1200,
 ↑
 1092.52 (P.C)

1230, 1260, 1290, -----
 ↑
 1281.02 (P.T)

∴ The length of first sub-chord = $1110 - 1092.52 = 17.48 \text{ m}$

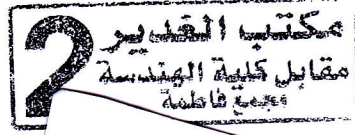
the length of last sub-chord = $1281.02 - 1260 = 21.02 \text{ m}$

no. of sub-chord at equally distance = $\frac{188.5 - (17.48 + 21.02)}{30} = 5$

(3)

station	chord (m)	deflection angle of sub-chord	Cumulative defl. angle
1092.52	0	0°	0
1110	17.48	* 1° 40' 9"	1° 40' 9"
1140	30	** 2° 51' 53"	* 4° 32' 2"
1170	30	2° 51' 53"	7° 23' 55"
1200	30	2° 51' 53"	10° 15' 48"
1230	30	2° 51' 53"	13° 07' 41"
1260	30	2° 51' 53"	15° 59' 34"
1281.02	21.02	2° 00' 26"	18° 00' 00" = 0/2

* deflection angle of sub-chord = $(\frac{L * 180}{\pi R}) / 2$



= $(\frac{17.48 * 180}{\pi * 300}) / 2$
= 1° 40' 9"

** " at equidistant

= $(\frac{30 * 180}{\pi * 300}) / 2$
= 2° 51' 53"

* 1° 40' 9" + 2° 51' 53" = 4° 32' 02"

4° 32' 02" + 2° 51' 53" = 7° 23' 55"