FAKULTET TEHNIČKIH NAUKA
DEPARTMAN ZA GRAĐEVINARSTVO I GEODEZIJU
LABORATORIJA ZA GEODEZIJU

INŽENJERSKA GEODEZIJA 1

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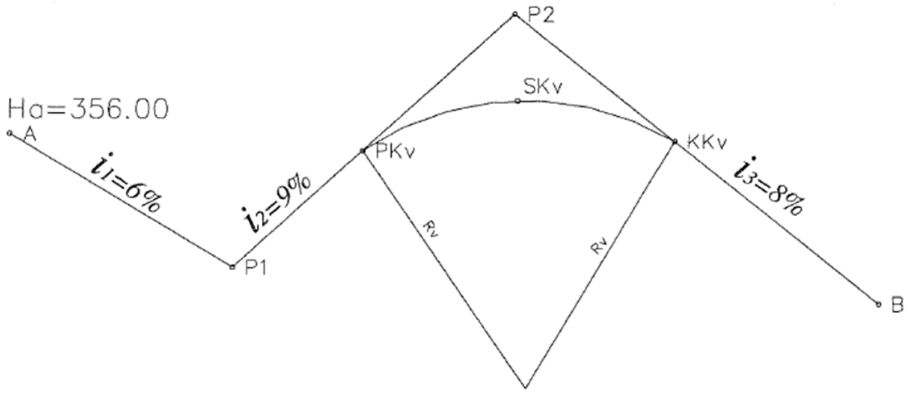
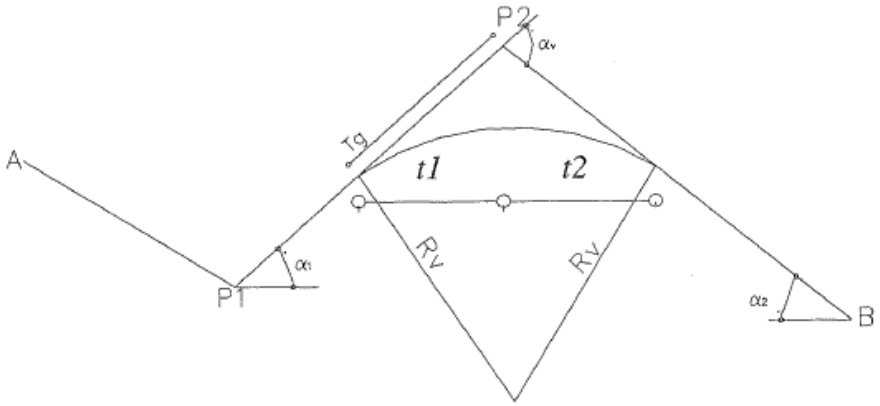
Vežba 4 VERTIKALNA KRIVINA

- Izračunati kote temena
- Izračunati kote nivelete na svakih 20m



Vežba 4 VERTIKALNA KRIVINA

- Vertikalni skretni ugao α_V
- Tetiva, tangenta



Vežba 4 VERTIKALNA KRIVINA

$H_1 = 356.00m$

$H_{P1} = H_A - 257.00 * \frac{i_1}{100} =$

$H_{P2} = H_{P1} + 340.00 * \frac{i_2}{100} =$

$H_B = H_{P2} - 400.00 * \frac{i_3}{100} =$

Vežba 4 VERTIKALNA KRIVINA

$H_1 = 356.00m$

$H_{P1} = H_A - 257.00 * \frac{i_1}{100} = 340.58m$

$H_{P2} = H_{P1} + 340.00 * \frac{i_2}{100} = 371.18m$

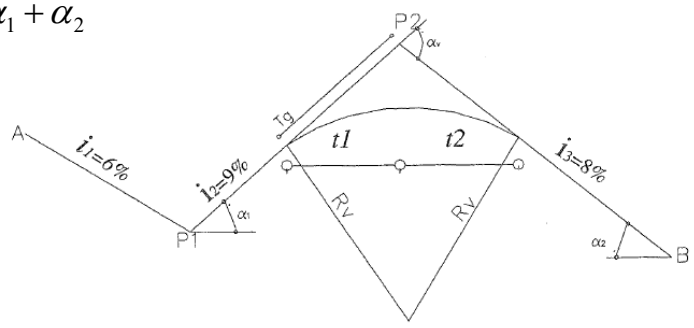
$H_B = H_{P2} - 400.00 * \frac{i_3}{100} = 339.18m$

Vežba 4

$\alpha_1 = \arctan\frac{i_2}{100}$ $\quad Tg = Rv \cdot \tan\frac{\alpha_v}{2}$ $\quad H_{PVK} = H_{P2} - t_1\frac{i_2}{100}$

$\alpha_2 = \arctan\frac{i_3}{100}$ $\quad t_1 = Tg \cdot \cos\alpha_1$ $\quad H_{KVK} = H_{P2} - t_2\frac{i_3}{100}$

$\alpha_V = \alpha_1 + \alpha_2$ $\quad t_2 = Tg \cdot \cos\alpha_2$



Vežba 4 VERTIKALNA KRIVINA

Vertikalna krivina ⟶ Vertikalni skretni ugao (α_V)

Nema koordinata, nema direkcioni ugao ⟶ Mora preko α_1 i α_2

$\alpha_1 = arctg\frac{i_2}{100}$ $\alpha_2 = arctg\frac{i_3}{100}$ $\alpha_v = \alpha_1 + \alpha_2$

$\alpha_1 =$ $\alpha_2 =$

$\alpha_v =$

$T_g = R_v * tan\frac{\alpha_v}{2} =$

$t_1 = T_g * cos\alpha_1$ $t_2 = T_g * cos\alpha_2 =$

$t_1 =$ $t_2 =$

Vežba 4 VERTIKALNA KRIVINA

Vertikalna krivina ⟶ Vertikalni skretni ugao (α_V)

Nema koordinata, nema direkcioni ugao ⟶ Mora preko α_1 i α_2

$\alpha_1 = arctg\frac{i_2}{100}$ $\alpha_2 = arctg\frac{i_3}{100}$ $\alpha_v = \alpha_1 + \alpha_2$

$\alpha_1 = 5°8'34"$ $\alpha_2 = 4°34'26"$

$\alpha_v = 9°43'00"$

$T_g = R_v * tan\frac{\alpha_v}{2} = 42.499m$

$t_1 = T_g * cos\alpha_1$ $t_2 = T_g * cos\alpha_2$

$t_1 = 42.328m$ $t_2 = 42.364m$

Vežba 4 VERTIKALNA KRIVINA

$$H_{PV} = H_{P2} - t_1 * \frac{i_2}{100} =$$

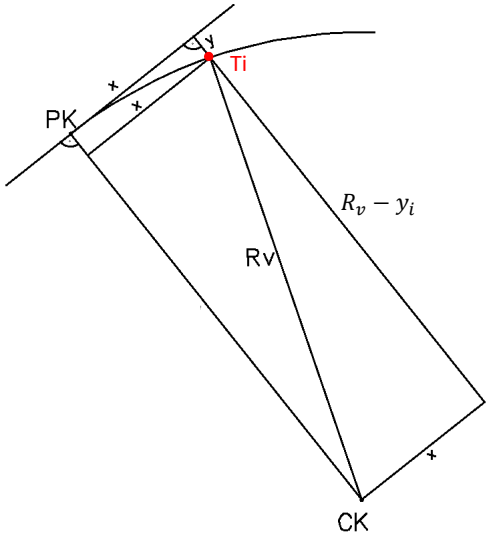
$$H_{KV} = H_{P2} - t_2 * \frac{i_3}{100} =$$

Vežba 4 VERTIKALNA KRIVINA

$$H_{PV} = H_{P2} - t_1 * \frac{i_2}{100} = 367.37m$$

$$H_{KV} = H_{P2} - t_2 * \frac{i_3}{100} = 367.79m$$

Vežba 4 VERTIKALNA KRIVINA



$$R_v^2 = x_i^2 + (R_v - y_i)^2$$

$$(R_v - y_i)^2 = R_v^2 - x_i^2 / \sqrt{}$$

$$R_v - y_i = \sqrt{R_v^2 - x_i^2}$$

$$y_i = R_v - \sqrt{R_v^2 - x_i^2}$$

u produžetku y

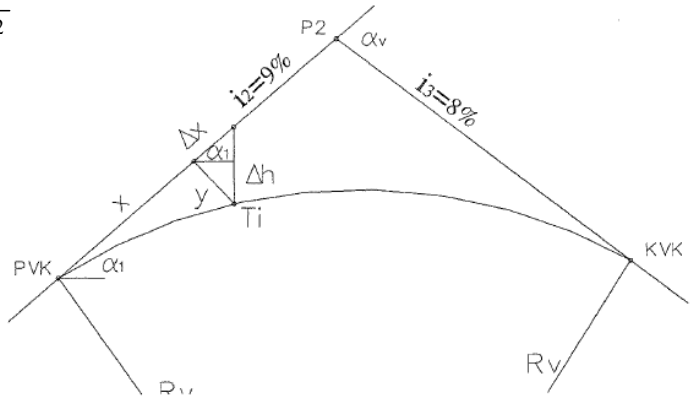
Vežba 4 VERTIKALNA KRIVINA

- Kota nivelete- elementi trouglova

$$y_i = Rv - \sqrt{Rv^2 - x_i^2}$$

$$\Delta x_i = y_i \cdot \tan \alpha_1$$

$$\Delta h_i = \frac{y_i}{\cos \alpha_1}$$



Vežba 4 VERTIKALNA KRIVINA

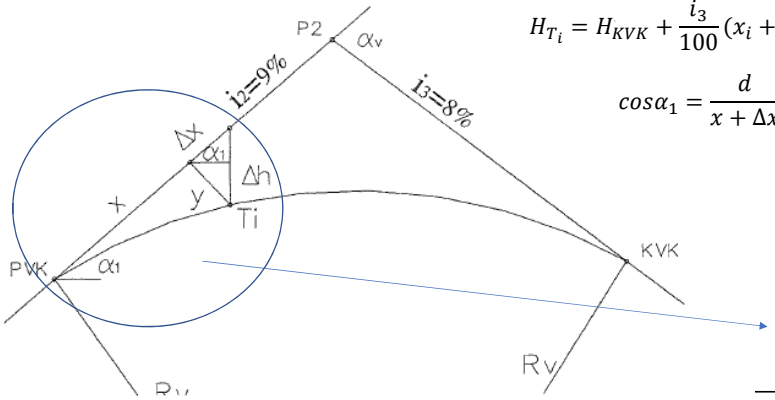
- Kota nivelete

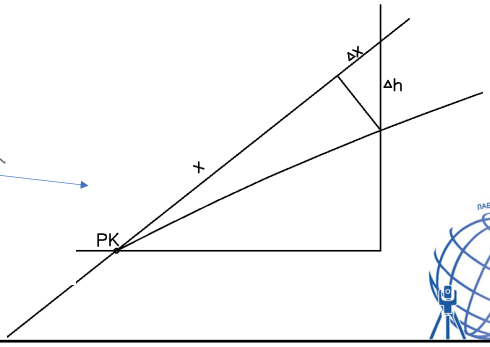
horizontalna dužina

$$H_{T_i} = H_{PVK} + \frac{i_2}{100}(x_i + \Delta x_i)\cos\alpha_1 - \Delta h_i$$

$$H_{T_i} = H_{KVK} + \frac{i_3}{100}(x_i + \Delta x_i)\cos\alpha_2 - \Delta h_i$$

$$cos\alpha_1 = \frac{d}{x + \Delta x} \rightarrow d = cos\alpha_1\,(x + \Delta x)$$





Vežba 4 VERTIKALNA KRIVINA

- Podatke prikazati tabelarno

Ti	xi [m]	yi [m]	Δxi [m]	Δhi [m]	HTi [m]	Napomena
1	20	-	-	-	-	Računato od PVK
2	40	-	-	-	-	
3	20	-	-	-	-	Računato od KVK
4	40	-	-	-	-	

Vežba 4 VERTIKALNA KRIVINA

- Podatke prikazati tabelarno

Ti	xi [m]	yi [m]	Δxi [m]	Δhi [m]	HTi [m]	Napomena
1	20	0,400	0,036	0,402	368,771	Računato od PVK
2	40	1,603	0,144	1,609	369,374	
3	20	0,400	0,032	0,401	368,992	Računato od KVK
4	40	1,603	0,128	1,608	369,392