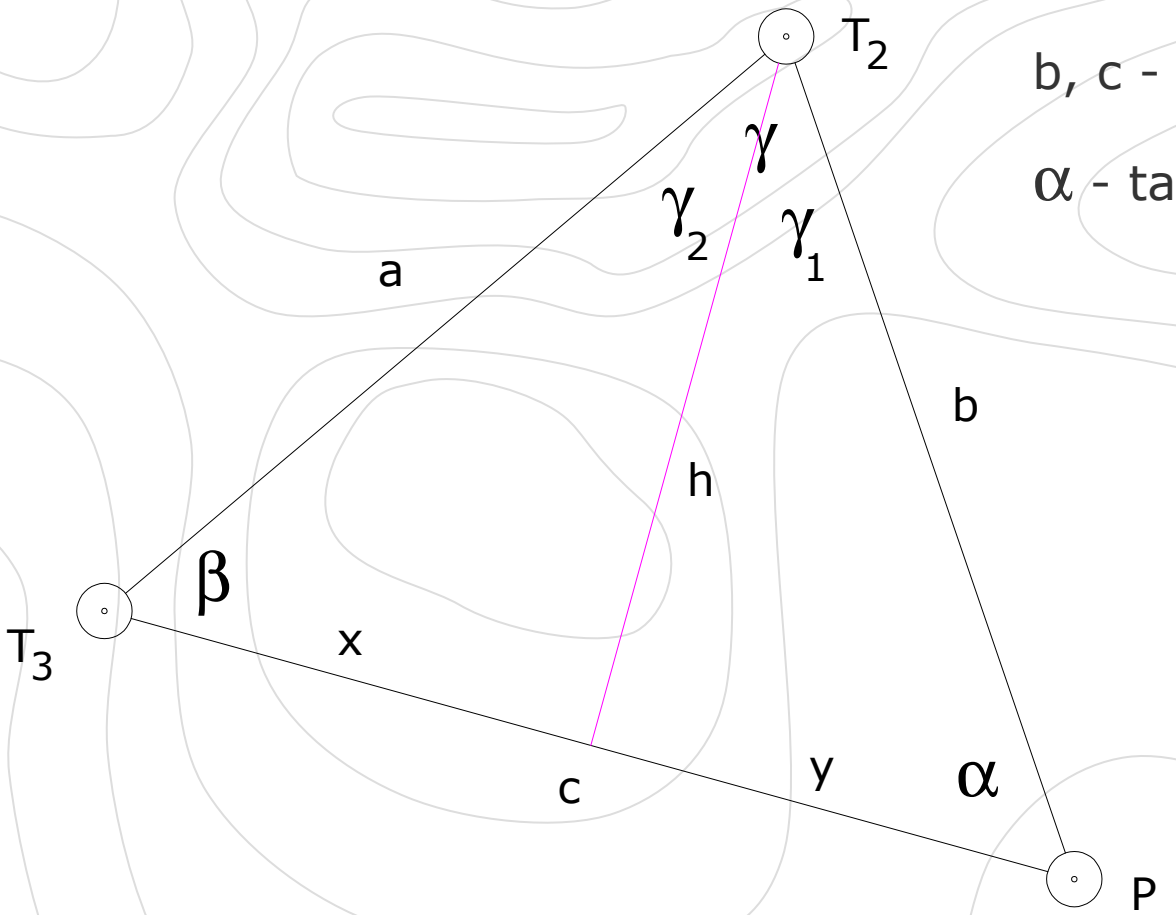
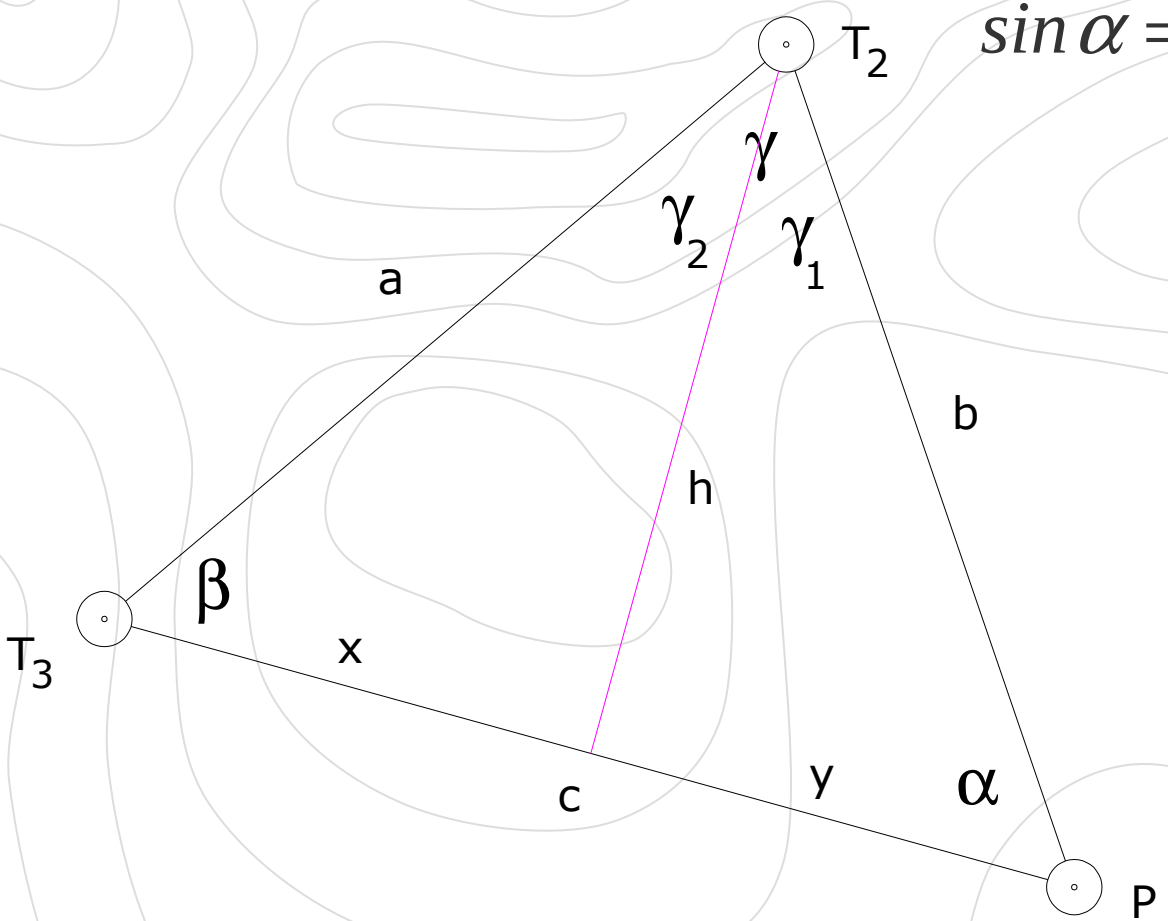
4. zadatak: Računanje nepoznate dužine i uglova



b, c - horizontalne dužine

α - tab. sa red. sredinama

Računanje nepoznate dužine i uglova



$$\sin\alpha = \frac{h}{b} \Rightarrow h = b * \sin\alpha$$

$$y = b * \cos\alpha$$

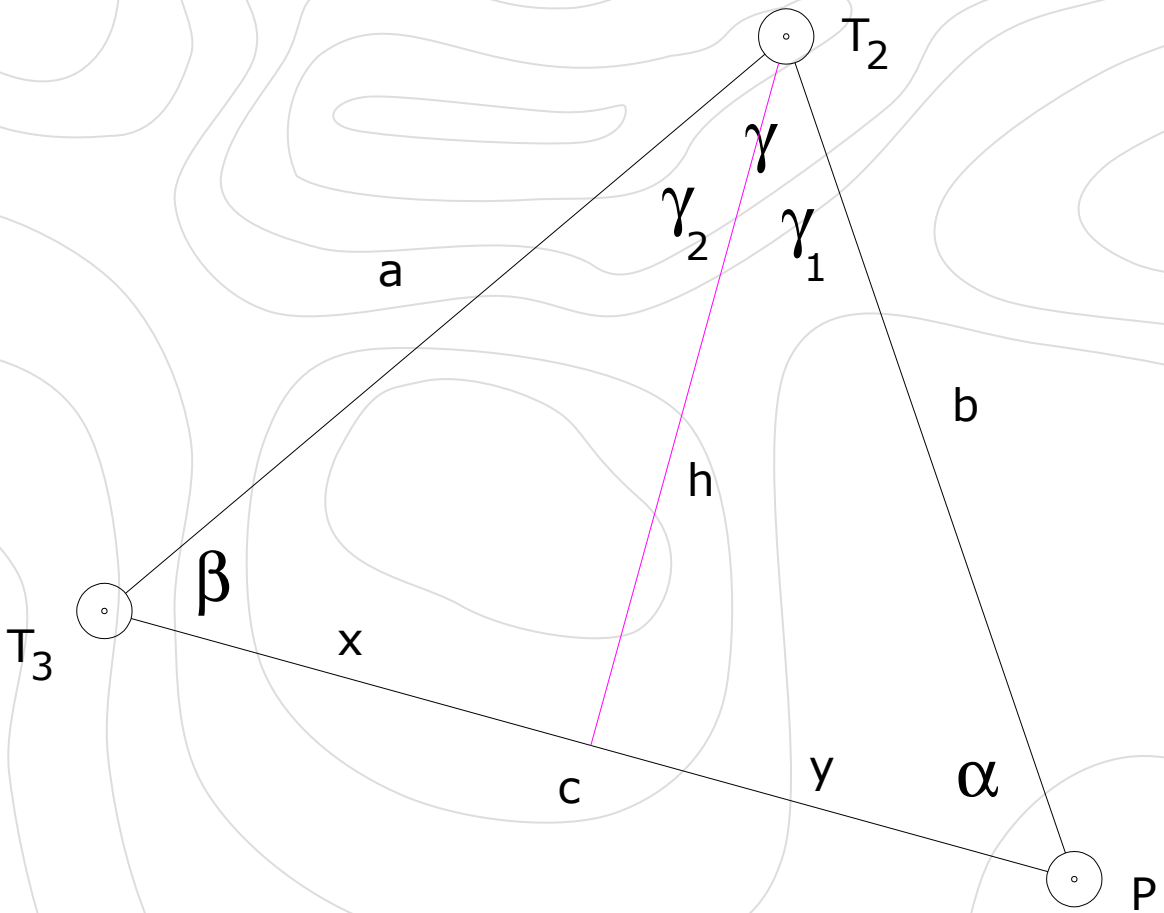
$$x = c - y$$

$$tg\beta = \frac{h}{x}$$

$$\gamma = 180 - (\alpha + \beta)$$

$$a = \sqrt{x^2 + h^2}$$

Računanje nepoznate dužine i uglova



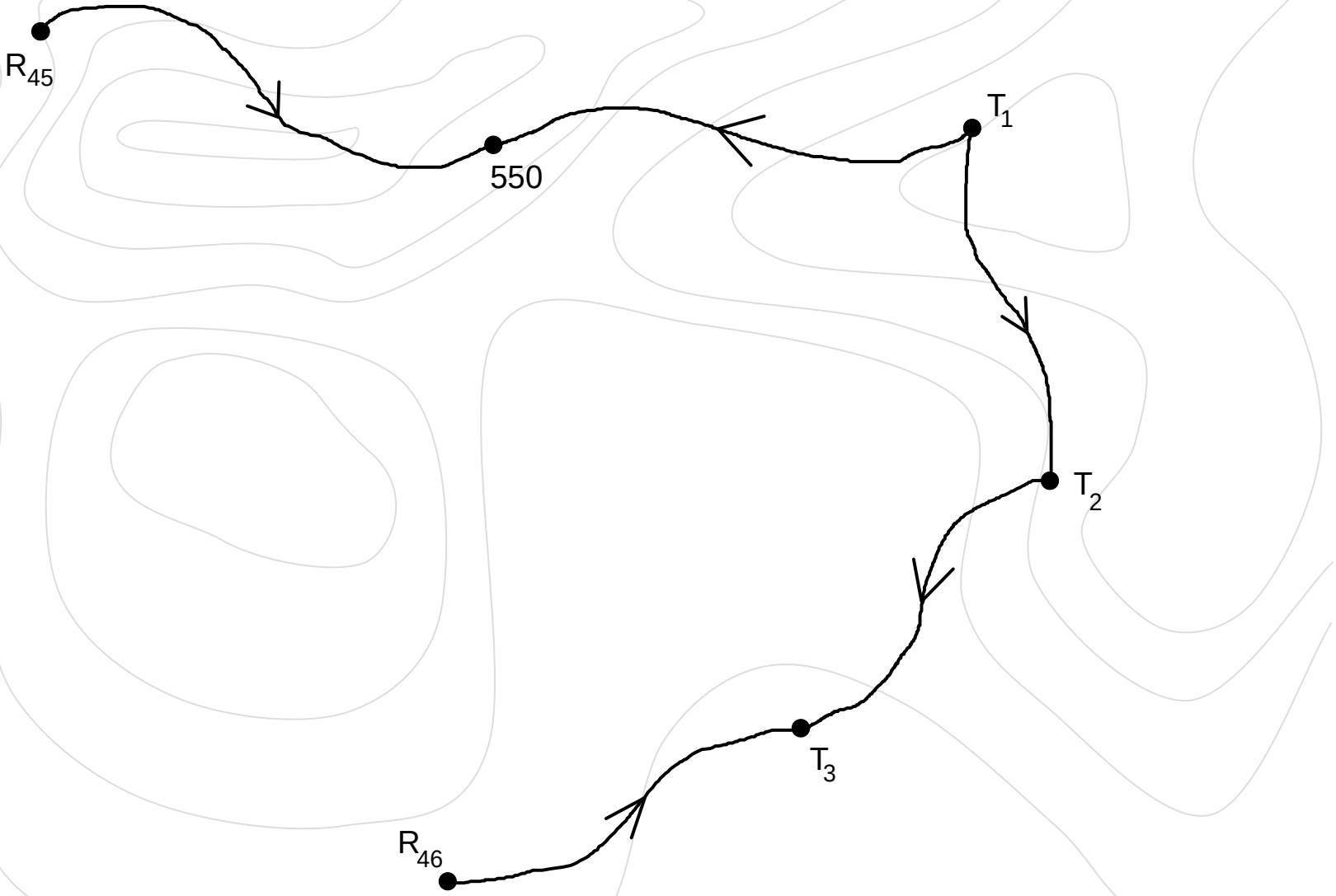
Kontrola

$$tg\gamma_2 = \frac{x}{h}$$

$$\gamma_1 = 180 - 90 - \alpha$$

$$\gamma = \gamma_1 + \gamma_2$$

4. zadatak: Računanje nadmorskih visina repera u nivelmanskom vlaku



T	Δh	d_{koso}	v	Δh'	H	T
R45					614.321	R45
	+181.1??	204.5?				
550						550
	-150.5??	243.4?				
T_1						T_1
	+11.9??	??				
T_2						T_2
	+193.1??	??				
T_3						T_3
	-17.9??	??				
R46					832.161	R46

Tabela sa merenim Δh

Tabela sa merenim D_{koso}

Dato H_P (R_{45}) i H_Z (R_{46})

T	Δh	d_{koso}	v	Δh'	H	T
R45					614.321	R45
	+181.1??	204.5?				
550						550
	-150.5??	243.4?				
T_1						T_1
	+11.9??	??				
T_2						T_2
	+193.1??	??				
T_3						T_3
	-17.9??	??				
R46					832.161	R46

$$D_{T2-T3_koso} = \sqrt{D^2_{T2-T3_hor} + \Delta h^2}$$

T	Δh	d_{koso}	v	Δh'	H	T
R45					614.321	R45
	+181.1??	204.5?				
550						550
	-150.5??	243.4?				
T_1						T_1
	+11.9??	??				
T_2						T_2
	+193.1??	??				
T_3						T_3
	-17.9??	??				
R46					832.161	R46

$$M = \sum \Delta h \qquad \sum d \qquad T = H_Z - H_P = H_{R46} - H_{R45}$$

$$f_{\Delta h} = T - M$$

$$f_{\Delta h} \leq \Delta_{dozvoljeno}$$

Računanje popravaka

$$v_{\Delta h_i} = \frac{f_{\Delta h}}{\sum d} d_i$$

Primer zaokruživanja

$$v_{\Delta h_1} = 0.00253 \approx 0.003$$
$$v_{\Delta h_2} = 0.00231 \approx 0.002$$
$$v_{\Delta h_3} = 0.00278 \approx 0.003$$
$$v_{\Delta h_4} = 0.00281 \approx 0.003$$
$$v_{\Delta h_5} = 0.00213 \approx 0.002$$

Za vrednosti zaokružene na tri decimale treba da bude:

$$\sum v_{\Delta h_i} = f_{\Delta h}$$

T	Δh	d_{koso}	v	Δh'	H	T
R45					614.321	R45
	+181.1??	204.5?	0.00?			
550						550
	-150.5??	243.4?	0.00?			
T_1						T_1
	+11.9??	??	0.00?			
T_2						T_2
	+193.1??	??	0.00?			
T_3						T_3
	-17.9??	??	0.00?			
R46					832.161	R46

$$v_{\Delta h_1} = 0.00253 \approx 0.003$$

$$v_{\Delta h_2} = 0.00231 \approx 0.002$$

$$v_{\Delta h_3} = 0.00278 \approx 0.003$$

$$v_{\Delta h_4} = 0.00281 \approx 0.003$$

$$v_{\Delta h_5} = 0.00213 \approx 0.002$$

T	Δh	d_{koso}	v	Δh'	H	T
R45		+		=	614.321	R45
550	+181.1??	204.5?	0.00?	+181.1??		550
T_1	-150.5??	243.4?	0.00?			T_1
T_2	+11.9??	??	0.00?			T_2
T_3	+193.1??	??	0.00?			T_3
R46	-17.9??	??	0.00?		832.161	R46

$$\Delta h_i' = \Delta h_i + v_{\Delta h_i}$$

T	Δh	d_{koso}	v	Δh'	H	T
R45					614.321	R45
	+181.1??	204.5?	0.00?	+181.1??		
550					795.5??	550
	-150.5??	243.4?	0.00?			
T_1						T_1
	+11.9??	??	0.00?			
T_2						T_2
	+193.1??	??	0.00?			
T_3						T_3
	-17.9??	??	0.00?			
R46					832.161	R46

+

=

$$H_i = H_{i-1} + \Delta h'_i$$

kontrola:

$$H_{45} = H_{T3} + \Delta h'_{T3-45}$$