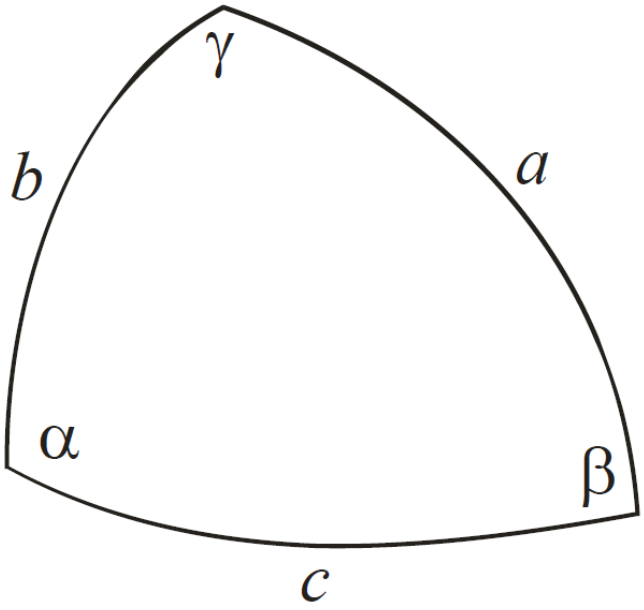
ENAČBE SFERNE TRIGONOMETRIJE



Kosinusni izrek za stranice

$$\cos a = \cos b \cos c + \sin b \sin c \cos \alpha$$
$$\cos b = \cos a \cos c + \sin a \sin c \cos \beta$$
$$\cos c = \cos a \cos b + \sin a \sin b \cos \gamma$$

Kosinusni izrek za kote

$$\cos \alpha = -\cos \beta \cos \gamma + \sin \beta \sin \gamma \cos a$$
$$\cos \beta = -\cos \alpha \cos \gamma + \sin \alpha \sin \gamma \cos b$$
$$\cos \gamma = -\cos \alpha \cos \beta + \sin \alpha \sin \beta \cos c$$

Sinusni izrek

$$\frac{\sin \alpha}{\sin a} = \frac{\sin \beta}{\sin b} = \frac{\sin \gamma}{\sin c}$$

Kotangensni izrek

$$\cot a \sin b = \cos b \cos \gamma + \cot \alpha \sin \gamma$$
$$\cot b \sin c = \cos c \cos \alpha + \cot \beta \sin \alpha$$
$$\cot c \sin b = \cos b \cos \alpha + \cot \gamma \sin \alpha$$
$$\cot a \sin c = \cos c \cos \beta + \cot \alpha \sin \beta$$
$$\cot b \sin a = \cos a \cos \gamma + \cot \beta \sin \gamma$$
$$\cot c \sin a = \cos a \cos \beta + \cot \gamma \sin \beta$$

Napierjeve enačbe (analogije)

$$\tan\frac{\alpha+\beta}{2}=\frac{\cos\frac{a-b}{2}}{\cos\frac{a+b}{2}}\cot\frac{\gamma}{2} \qquad \tan\frac{\alpha-\beta}{2}=\frac{\sin\frac{a-b}{2}}{\sin\frac{a+b}{2}}\cot\frac{\gamma}{2}$$

$$\tan\frac{\alpha+\gamma}{2}=\frac{\cos\frac{a-c}{2}}{\cos\frac{a+c}{2}}\cot\frac{\beta}{2} \qquad \tan\frac{\alpha-\gamma}{2}=\frac{\sin\frac{a-c}{2}}{\sin\frac{a+c}{2}}\cot\frac{\beta}{2}$$

$$\tan\frac{\beta+\gamma}{2}=\frac{\cos\frac{b-c}{2}}{\cos\frac{b+c}{2}}\cot\frac{\alpha}{2} \qquad \tan\frac{\beta-\gamma}{2}=\frac{\sin\frac{b-c}{2}}{\sin\frac{b+c}{2}}\cot\frac{\alpha}{2}$$

$$\tan\frac{a+b}{2}=\frac{\cos\frac{\alpha-\beta}{2}}{\cos\frac{\alpha+\beta}{2}}\tan\frac{c}{2} \qquad \tan\frac{a-b}{2}=\frac{\sin\frac{\alpha-\beta}{2}}{\sin\frac{\alpha+\beta}{2}}\tan\frac{c}{2}$$

$$\tan\frac{a+c}{2}=\frac{\cos\frac{\alpha-\gamma}{2}}{\cos\frac{\alpha+\gamma}{2}}\tan\frac{b}{2} \qquad \tan\frac{a-c}{2}=\frac{\sin\frac{\alpha-\gamma}{2}}{\sin\frac{\alpha+\gamma}{2}}\tan\frac{b}{2}$$

$$\tan\frac{b+c}{2}=\frac{\cos\frac{\beta-\gamma}{2}}{\cos\frac{\beta+\gamma}{2}}\tan\frac{a}{2} \qquad \tan\frac{b-c}{2}=\frac{\sin\frac{\beta-\gamma}{2}}{\sin\frac{\beta+\gamma}{2}}\tan\frac{a}{2}$$

Loksodroma

$$\cot\alpha=\frac{1}{(\lambda_B-\lambda_A)\frac{\pi}{180°}}\ln\left(\frac{\tan\left(45°+\frac{\varphi_B}{2}\right)}{\tan\left(45°+\frac{\varphi_A}{2}\right)}\right)$$

$\lambda_A-\lambda_B$	$\cot\alpha$	kvadrant	α
$-$	$+$	I. kvadrant	α
$-$	$-$	II. kvadrant	$\alpha+180°$
$+$	$+$	III. kvadrant	$\alpha+180°$
$+$	$-$	IV. kvadrant	$\alpha+360°$

$$D_{AB}^{loks}=R\frac{(\varphi_B-\varphi_A)}{\cos\alpha}\frac{\pi}{180°}$$