VAJA 9: SFERNA TRIGONOMETRIJA – REŠITVE NALOG

2024/2025

Naloga 1

Reši sferne trikotnike, podane z:

A	$a = 125^\circ\,13'\,14''$	$b = 53^\circ\,58'\,35''$	$c = 96^\circ\,7'\,54''$
	$\boldsymbol{\alpha = 129^\circ\,43'\,21''}$	$\boldsymbol{\beta = 49^\circ\,35'\,36''}$	$\boldsymbol{\gamma = 69^\circ\,24'\,33''}$
B	$\alpha = 81^\circ\,14'\,11''$	$\beta = 93^\circ\,24'\,41''$	$\gamma = 104^\circ\,58'\,34''$
	$\boldsymbol{a = 79^\circ\,58'\,59''}$	$\boldsymbol{b = 59^\circ\,56'\,40''}$	$\boldsymbol{c = 105^\circ\,43'\,52''}$
C	$b = 120^\circ\,31'\,37''$	$c = 76^\circ\,43'\,29''$	$\alpha = 108^\circ\,12'\,50''$
	$\boldsymbol{a = 112^\circ\,15'\,8''}$	$\boldsymbol{\beta = 117^\circ\,51'\,45''}$	$\boldsymbol{\gamma = 87^\circ\,19'\,11''}$
D	$b = 95^\circ\,1'\,22''$	$\alpha = 87^\circ\,13'\,2''$	$\gamma = 152^\circ\,47'\,48''$
	$\boldsymbol{a = 84^\circ\,15'\,45''}$	$\boldsymbol{c = 152^\circ\,54'\,34''}$	$\boldsymbol{\beta = 89^\circ\,48'\,59''}$
E	$b = 5^\circ\,14'\,3''$	$c = 38^\circ\,47'\,12''$	$\beta = 48^\circ\,13'\,59''$
		Trikotnik ne obstaja.	
F	$b = 55^\circ\,43'\,15''$	$c = 38^\circ\,25'\,12''$	$\beta = 73^\circ\,31'\,29''$
	$\boldsymbol{a = 58^\circ\,8'\,28''}$	$\boldsymbol{\alpha = 80^\circ\,17'\,46''}$	$\boldsymbol{\gamma = 46^\circ\,9'\,5''}$
G	$a = 61^\circ\,3'\,37''$	$c = 35^\circ\,57'\,22''$	$\gamma = 28^\circ\,22'\,49''$
	$\boldsymbol{b_1 = 84^\circ\,57'\,44''}$	$\boldsymbol{\alpha_1 = 45^\circ\,6'\,27''}$	$\boldsymbol{\beta_1 = 126^\circ\,15'\,19''}$
	$\boldsymbol{b_2 = 30^\circ\,44'\,30''}$	$\boldsymbol{\alpha_2 = 134^\circ\,53'\,33''}$	$\boldsymbol{\beta_2 = 24^\circ\,26'\,38''}$
H	$a = 59^\circ\,33'\,17''$	$c = 165^\circ\,17'\,28''$	$\gamma = 45^\circ\,41'\,1''$
		Trikotnik ne obstaja.	
I	$c = 81^\circ\,3'\,8''$	$\alpha = 73^\circ\,20'\,40''$	$\gamma = 11^\circ\,39'\,13''$
		Trikotnik ne obstaja.	
J	$b = 71^\circ\,31'\,23''$	$\alpha = 170^\circ\,0'\,5''$	$\beta = 57^\circ\,13'\,33''$
	$\boldsymbol{a = 168^\circ\,42'\,20''}$	$\boldsymbol{c = 102^\circ\,34'\,18''}$	$\boldsymbol{\gamma = 59^\circ\,54'\,43''}$
K	$b = 22^\circ\,53'\,53''$	$\alpha = 89^\circ\,3'\,44''$	$\beta = 41^\circ\,39'\,15''$
	$\boldsymbol{a_1 = 35^\circ\,49'\,39''}$	$\boldsymbol{c_1 = 28^\circ\,44'\,22''}$	$\boldsymbol{\gamma_1 = 55^\circ\,13'\,5''}$
	$\boldsymbol{a_2 = 144^\circ\,10'\,21''}$	$\boldsymbol{c_2 = 152^\circ\,3'\,10''}$	$\boldsymbol{\gamma_2 = 126^\circ\,49'\,4''}$
L	$c = 17^\circ\,52'\,1''$	$\beta = 66^\circ\,30'\,14''$	$\gamma = 138^\circ\,19'\,27''$
		Trikotnik ne obstaja.	

Naloga 2

Reši pravokotna sferna trikotnika, podana z:

A	$a = 45^\circ\,45'\,47''$	$\alpha = 60^\circ\,15'\,2''$	$\gamma = 90^\circ\,0'\,0''$
	$\mathbf{b_1 = 35^\circ\,56'\,16''}$	$\mathbf{c_1 = 55^\circ\,36'\,25''}$	$\mathbf{\beta_1 = 45^\circ\,20'\,10''}$
	$\mathbf{b_2 = 144^\circ\,3'\,44''}$	$\mathbf{c_2 = 124^\circ\,23'\,35''}$	$\mathbf{\beta_2 = 134^\circ\,45'\,50''}$
B	$a = 61^\circ\,17'\,20''$	$c = 33^\circ\,22'\,39''$	$\beta = 90^\circ\,0'\,0''$
	$\mathbf{b = 66^\circ\,20'\,58''}$	$\mathbf{\alpha = 73^\circ\,13'\,50''}$	$\mathbf{\gamma = 36^\circ\,54'\,46''}$

Naloga 3

Reši pravostranična sferna trikotnika, podana z:

A	$a = 41^\circ\,43'\,13''$	$c = 90^\circ\,0'\,0''$	$\beta = 70^\circ\,31'\,5''$
	$\mathbf{b = 77^\circ\,10'\,35''}$	$\mathbf{c = 40^\circ\,2'\,56''}$	$\mathbf{\beta = 104^\circ\,47'\,29''}$
B	$b = 90^\circ\,0'\,0''$	$c = 123^\circ\,36'\,58''$	$\alpha = 49^\circ\,11'\,8''$
	$\mathbf{a = 57^\circ\,1'\,22''}$	$\mathbf{\beta = 64^\circ\,26'\,48''}$	$\mathbf{\gamma = 131^\circ\,17'\,46''}$

Naloga 4

Iz Ljubljane ($\varphi = 46^\circ\,5'\,30''\,S$, $\lambda = 14^\circ\,32'\,15''\,V$) letimo v Panamo ($\varphi = 8^\circ\,58'\,0''\,S$, $\lambda = 79^\circ\,32'\,0''\,Z$) po ortodromi, nazaj v Ljubljano pa se vračamo najprej po vzporedniku nato po poldnevniku. Kolikšni sta dolžini poti (v kilometrih) tja in nazaj, če v obeh primerih letimo na višini 7 km. Polmer Zemlje znaša 6371 km.

dolžina poti Ljubljana – Panama: $D = 9612$ km
dolžina poti Panama – Ljubljana: $D = 14\,476$ km