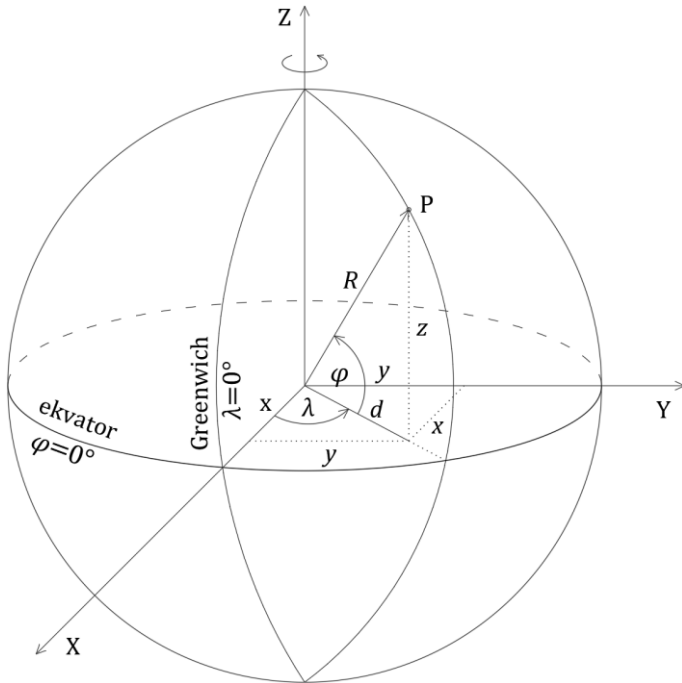


VAJA 8 – PROSTORSKI KOORDINATNI SISTEMI

- 1** $(\varphi, \lambda, R) \rightarrow (x, y, z)$: **PRETVORBA IZ GEOGRAFSKIH (KROGELNIH) KOORDINAT V KARTEZIČNE KOORDINATE**

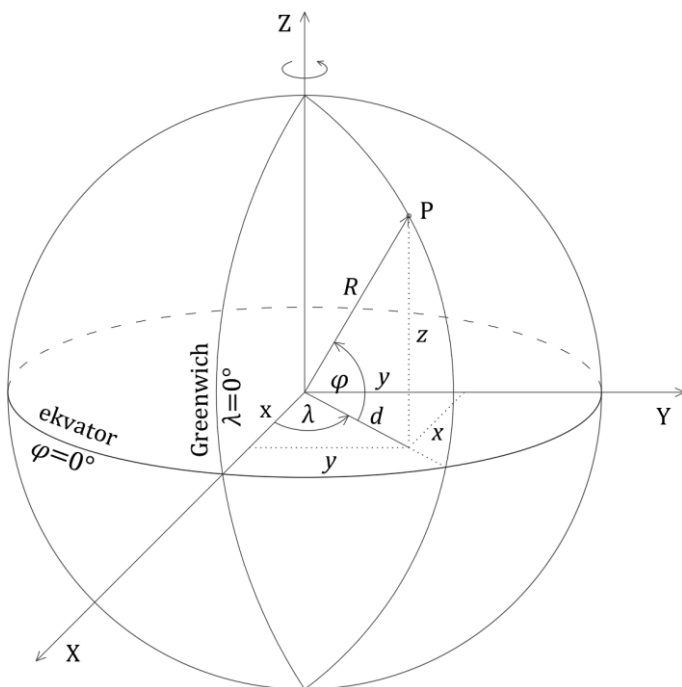


$$x = R \cos \varphi \cos \lambda$$

$$y = R \cos \varphi \sin \lambda$$

$$z = R \sin \varphi$$

- 2** $(x, y, z) \rightarrow (\varphi, \lambda, R)$: **PRETVORBA KARTEZIČNIH KOORDINAT V GEOGRAFSKE (KROGELNE) KOORDINATE**



$$R = \sqrt{x^2 + y^2 + z^2}$$

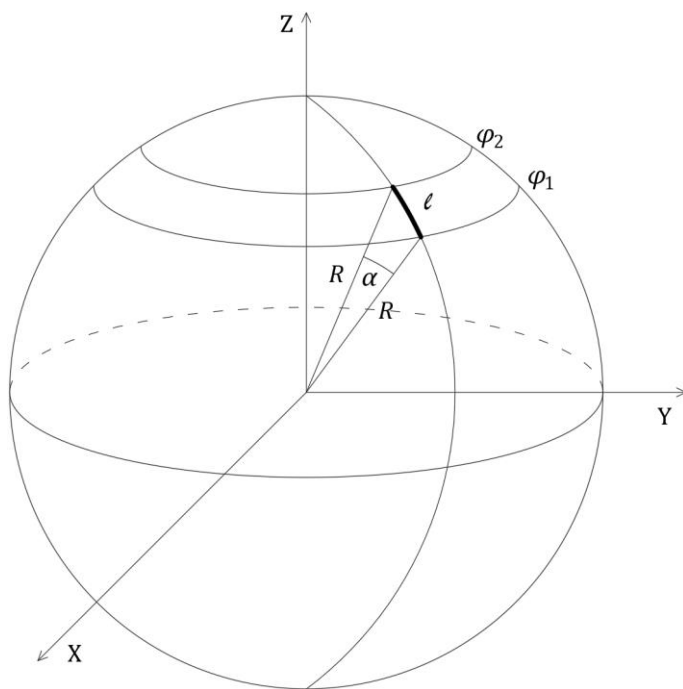
$$\varphi = \arcsin \frac{z}{R} \in [-90^\circ, 90^\circ]$$

$$\lambda = \arctan \frac{y}{x} \in (-180^\circ, 180^\circ]$$

Če $x < 0$:

- če $y \geq 0$: $\lambda = \lambda + 180^\circ$,
- če $y < 0$: $\lambda = \lambda - 180^\circ$.

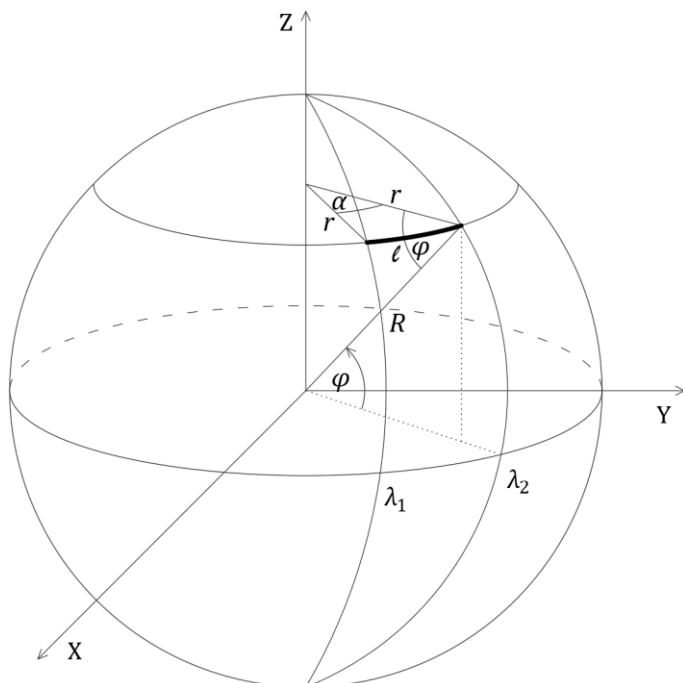
3 DOLŽINA LOKA POLDNEVNIKA (MERIDIANA) NA ZEMLJI-KROGLI



$$\alpha = \Delta\varphi = |\varphi_2 - \varphi_1|$$

$$l = R \alpha [^\circ] \frac{\pi}{180^\circ} = R \alpha [\text{rad}]$$

4 DOLŽINA LOKA VZPOREDNIKA NA ZEMLJI-KROGLI



$$\alpha = \Delta\lambda = |\lambda_2 - \lambda_1|$$

Če $\alpha > 180^\circ \rightarrow \alpha = 360 - \alpha$.

$$r = R \cos \varphi$$

$$l = r \alpha [^\circ] \frac{\pi}{180^\circ} = r \alpha [\text{rad}]$$