Prevod sferickych na kartezske

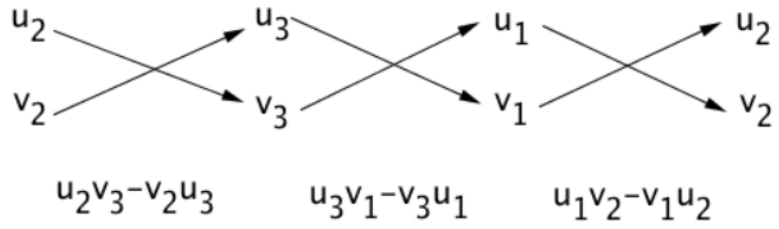
$$\begin{aligned} x &= r\sin\theta\cos\phi \\ y &= r\sin\theta\sin\phi \\ z &= r\cos\theta \end{aligned} \tag{1}$$

a prevod kartezske na sfericke

$$\begin{aligned} r &= \sqrt{x^2+y^2+z^2} \\ \varphi &= \text{arctg2}(y,x) \\ \theta &= \arccos\left(\frac{z}{r}\right) \end{aligned} \tag{2}$$

Velikost oreinetovane vektoru: $\vec{v} = B - A = (b_1 - a_1, b_2 - a_2)$.
Velikost vektoru: $|\vec{u}| = \sqrt{u_1^2 + u_2^2 + u_3^2}|$
Skalarni soucin: $\vec{x} \cdot \vec{y} = (x_1, x_2, x_3) \cdot (y_1, y_2, y_3) = x_1y_1 + x_2y_2 + x_3y_3 = |x||y|\cos\alpha$
Vektorovy soucin:

$$\mathbf{u} \times \mathbf{v} = \left(u_2v_3 - u_3v_2\ ,\ u_3v_1 - u_1v_3\ ,\ u_1v_2 - u_2v_1\right)$$



smerovy vektor primky: $\vec{v} = B - A$
parametricka rovnice primky $X = A + t\vec{u}$

$$\begin{aligned} x &= a_1 + tu_1 \\ y &= a_2 + tu_2 \end{aligned} \tag{3}$$

Obecna rovnice primky: $ax + by + c = 0$, Normalovy vektor $\vec{n} = (n_1, n_2)$,$a = n_1$,$b = n_2$, ($\vec{u} = (u_1, u_2) \Rightarrow \vec{n} = (u_2, -u_1)$)
Odchylka primek

$$\cos\varphi = \frac{|\vec{v}\vec{u}|}{|\vec{v}||\vec{u}|} \tag{4}$$

Stredova rovnice kruznice: $(x-m)^2+(y-n)^2=r^2$

Obecna rovnice kruznice: $x^2+y^2-2mx-2ny+p=0$, kde $p=m^2+n^2-r^2$

Tabulka goniometrickych funkci

Standardní **Tabulka hodnot goniometrických funkcí**

x	0	$\frac{\pi}{6}$	$\frac{\pi}{4}$	$\frac{\pi}{3}$	$\frac{\pi}{2}$	π	$\frac{3\pi}{2}$	2π
	0°	30°	45°	60°	90°	180°	270°	360°
sin(*x*)	0	$\frac{1}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{\sqrt{3}}{2}$	1	0	-1	0
cos(*x*)	1	$\frac{\sqrt{3}}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{1}{2}$	0	-1	0	1
tg(*x*)	0	$\frac{\sqrt{3}}{3}$	1	$\sqrt{3}$	-	0	-	0
cotg(*x*)	-	$\sqrt{3}$	1	$\frac{\sqrt{3}}{3}$	0	-	0	-