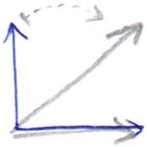
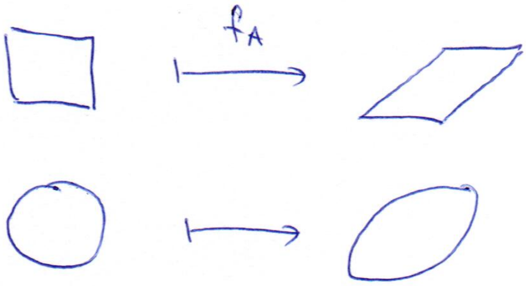
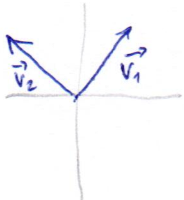
Př. 10.28: $A = \begin{pmatrix} 1 & 1 \\ 0 & 1 \end{pmatrix}$

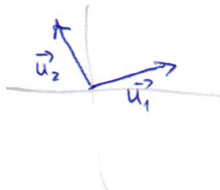




elipsa?

Naučíme se: $\exists B, C$ ON báze t.ž. $[f]^B_C$ je diagonální

zde: $B =$ 

$C =$ 

$\begin{pmatrix} \sim 1.62 & 0 \\ 0 & \sim 0.62 \end{pmatrix}$

čili $f(\vec{v}_1) = 1.62 \cdot \vec{u}_1$, $f(\vec{v}_2) = 0.62 \cdot \vec{u}_2$

Apl.: Kruh: $K = \{\vec{x} : \|\vec{x}\| \leq 1\} = \{\vec{x} : x_1^2 + x_2^2 \leq 1$ pro $[\vec{x}]_B = \begin{pmatrix} x_1 \\ x_2 \end{pmatrix}\}$

$\rightsquigarrow f(K) = \{A\vec{x} : x_1^2 + x_2^2 \leq 1\}$

$= \{\vec{y} : [\vec{y}]_C = \begin{pmatrix} y_1 \\ y_2 \end{pmatrix}$ & $\left(\frac{y_1}{1.62}\right)^2 + \left(\frac{y_2}{0.62}\right)^2 \leq 1\}$

... elipsa s osami $\vec{u}_1, \vec{u}_2$ (báze C) !

! $A = UDV^{-1} = UDV^*$ kde $U = [id]^C_K$, $V = [id]^B_K$

(U: unit., D: diag., V^*: unit.)

:

zde: ortog. $\circ$ diag. $\circ$ ortog.

ortog. ↓ < rotace, osová sym.

ortog. ↓ < rotace, osová sym.

$\rightsquigarrow$ rotace $\circ$ diag $\circ$ rotace