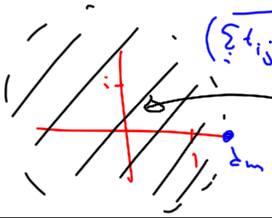
$$\begin{pmatrix} 0{,}2 & 0 & \boxed{0{,}5} \\ 0{,}2 & 1 & \boxed{0} \\ 0{,}6 & 0 & \boxed{0{,}5} \end{pmatrix} \cdot \begin{pmatrix} 1 \\ 0 \\ 0 \end{pmatrix} = \begin{pmatrix} 0{,}2 \\ 0{,}2 \\ 0{,}6 \end{pmatrix}$$

$$|T - \lambda E| = \begin{pmatrix} t_{11}-\lambda & & \\ & \ddots & \\ & & t_{nn}-\lambda \end{pmatrix}$$

$$\left(\sum t_{ij}\right) - \lambda = 1 - \lambda$$



vsi λ v krogu.

11 30-8:03

$\langle\ ,\ \rangle : V \times V \to V$ simetr., bilin.

$\|v\|^2 = \langle v, v\rangle = 0 \iff \boxed{v = 0}$

$\langle v, w\rangle = 0 \iff v \perp w$

$f : V \to V$ ortogonalna: $\|f(u)\| = \|u\|$.

$\Updownarrow$

$A^T = A^{-1}$ po vrsticah v ortonorm. b.

11 30-8:29

$f(W) \subset W$

$\langle f(u), f(v)\rangle = \langle u, v\rangle$

$$A = \begin{pmatrix} B & 0 \\ 0 & D \end{pmatrix}$$

$W^\perp \oplus W = V$

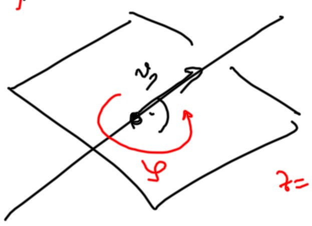
11 30-8:35

$\lambda \in \mathbb{R}$ realni lastni, v realni vekt.

$$\begin{pmatrix} \lambda & 0 \\ 0 & \boxed{} \end{pmatrix}$$

$\langle v\rangle$ $\langle v\rangle^\perp$

v $\mathbb{R}^3$:



$\lambda_1 = 1$

$\lambda_2 = z$

$\lambda_3 = \bar{z}$

$z = \cos\varphi + i \sin\varphi$

11 30-8:43

ortogonalna: $\langle f(u), f(v)\rangle = \langle u, v\rangle$

$\langle f(u), v\rangle = \langle u, f^{-1}(v)\rangle$

simetrična: $\langle f(u), v\rangle = \langle u, f(v)\rangle$

v ortonorm. bazi $\langle u, v\rangle = x^T \cdot y$

$v \mapsto \langle v, -\rangle$, $v \in V$, $\langle v, -\rangle \in V^*$

$\Uparrow$ transp. v ortog. b.

$V \xrightarrow{f} W \xrightarrow{\alpha} \mathbb{R}$, $f^*(\alpha) : V \to \mathbb{R}$

$f^* : W^* \to V^*$

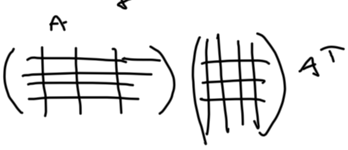
$f^*\alpha(u) = \alpha(f(u))$

11 30-9:05

$$\begin{array}{ccc} V^* & \xleftarrow{f^*} & W^* \\ {\scriptstyle\langle\rangle}\downarrow\cong & & \downarrow\cong{\scriptstyle\langle,\rangle} \\ V & \overset{f}{\underset{f^*}{\rightleftarrows}} & W \end{array}$$

$A^T = A^{-1}$

$A^T = A$



$\langle A^T A \cdot x, x\rangle = \langle Ax, Ax\rangle \geq 0$

$\langle Bx, x\rangle = \lambda \langle x, x\rangle \geq 0$, $\lambda \geq 0$

11 30-9:19

$$A = \begin{pmatrix} \lambda_1 & & 0 \\ & \ddots & \\ 0 & & \lambda_n \end{pmatrix}$$

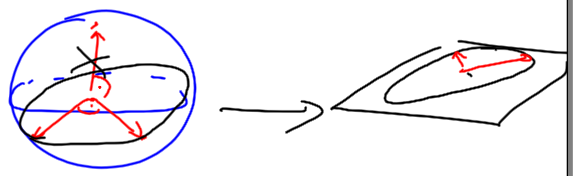
$$\sqrt{A} = \begin{pmatrix} \sqrt{\lambda_1} & & 0 \\ & \ddots & \\ 0 & & \sqrt{\lambda_n} \end{pmatrix}$$

$$(\sqrt{A})^2 = A$$

$$(S^T\sqrt{A}\cancel{S})(\cancel{S^T}\sqrt{A}S) = S^T A S$$

11 30-9:33

$S^2 \subset \mathbb{R}^3$



$$(V D^{-1}\cancel{U^T})(\cancel{U} D V^T) = E$$

11 30-9:46