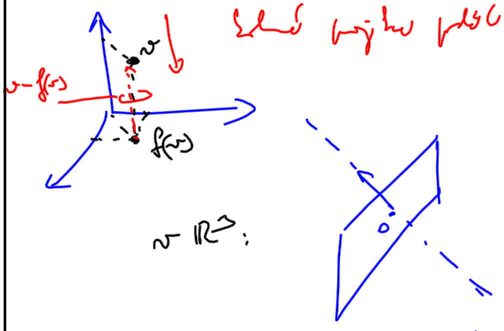
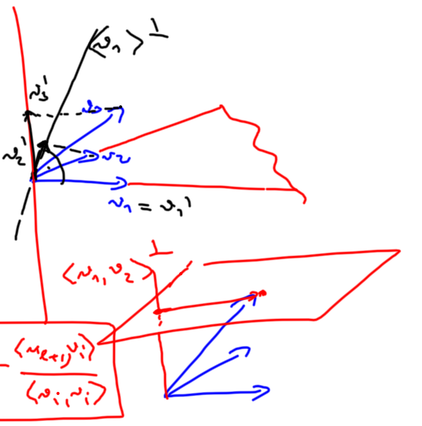
Zobrazí projekci podle z



v $\mathbb{R}^3$:

$$\langle u+u', v\rangle = \underbrace{\langle u, v\rangle}_{0} + \underbrace{\langle u', v\rangle}_{0} = 0$$

11 22-18:07



$$v_{k+1} = u_{k+1} + \sum_i a_i v_i$$

$$\boxed{a_i := -\frac{\langle u_{k+1}, v_i\rangle}{\langle v_i, v_i\rangle}}$$

11 22-18:20

$$x = \begin{pmatrix} x_1 \\ \vdots \\ x_n \end{pmatrix} \quad y = \begin{pmatrix} y_1 \\ \vdots \\ y_n \end{pmatrix} \quad \text{v } \mathbb{R}^n \simeq V$$

$$\boxed{\langle x, y\rangle = x^T \cdot y = x_1 y_1 + \dots + x_n y_n}$$

$$\|f(u)\|^2 = \|u\|^2$$

$$\|f(u)\|^2 + \|f(v)\|^2 + \cancel{2}\langle f(u), f(v)\rangle$$
$$\|u\|^2 + \|v\|^2 + \cancel{2}\langle u, v\rangle$$

11 22-18:29

$$\begin{tikzcd} & V \arrow[dl, "u"'] \arrow[dr, "v"] & \\ \mathbb{R}^n \arrow[rr, dashed, "f"] & & \mathbb{R}^n \end{tikzcd}$$

zachování velikosti

$$A'^T A' = \cancel{S^T} \cancel{A^T} \cancel{S} \cdot \cancel{S^T} \cancel{A} \cancel{S} = E$$

11 22-18:44

$$\mathbb{R}^5 = \langle v_1\rangle \oplus \langle v_2\rangle \oplus \langle v_3\rangle \oplus \langle v_4\rangle \oplus \langle v_5\rangle$$

vlastní vektory pro A

$$v = a_1 v_1 + a_2 v_2 + a_3 v_3 + a_4 v_4 + a_5 v_5$$

$$Av = a_1 \lambda_1 v_1 + a_2 \lambda_2 v_2 + \dots$$

$$A^k v = a_1 \lambda_1^k v_1 + a_2 \lambda_2^k v_2 + \dots$$

11 22-19:08

$x = (x_0, x_1, x_2, \dots)$ řešení, tj. takové, že $\boxed{a_0 x_n + \dots + a_k x_{n-k} = 0}$

$y = (y_0, y_1, y_2, \dots)$

$$x + y := (x_0 + y_0, x_1 + y_1, x_2 + y_2, \dots)$$

$$a_0(x_n + y_n) + a_1(x_{n-1} + y_{n-1}) + \dots + a_k(x_{n-k} + y_{n-k})$$

$$= \underbrace{(a_0 x_n + a_1 x_{n-1} + \dots + a_k x_{n-k})}_{0} + \underbrace{(\;\dots\;)}_{0}$$

$$= 0$$

11 22-19:20

$$\begin{pmatrix} 1 & 1 & 1 & 1 \\ \lambda_1 & \lambda_2 & \lambda_3 & \lambda_4 \\ \lambda_1^2 & \lambda_2^2 & \lambda_3^2 & \lambda_4^2 \\ \lambda_1^3 & \lambda_2^3 & \lambda_3^3 & \lambda_4^3 \end{pmatrix}$$

$\lambda_i \neq \lambda_j \quad i \neq j$

$\lambda_i \neq 0$

$z = r(\cos\varphi + i\sin\varphi) \qquad z^n = r^n(\cos n\varphi + i\sin n\varphi)$

$\bar{z} = r(\cos\varphi - i\sin\varphi) \qquad \bar{z}^n = r^n(\cos n\varphi - i\sin n\varphi)$

$\Rightarrow \quad r^n \cos n\varphi = x_n$

$\quad\;\; r^n \sin n\varphi = x'_n$

11 22-19:28

$\lambda^2 + 1 = 0 \qquad \lambda_{1,2} = \pm i$

$\alpha \cos n\varphi + \beta \sin n\varphi \qquad \varphi = \pi/2$

11 22-19:48