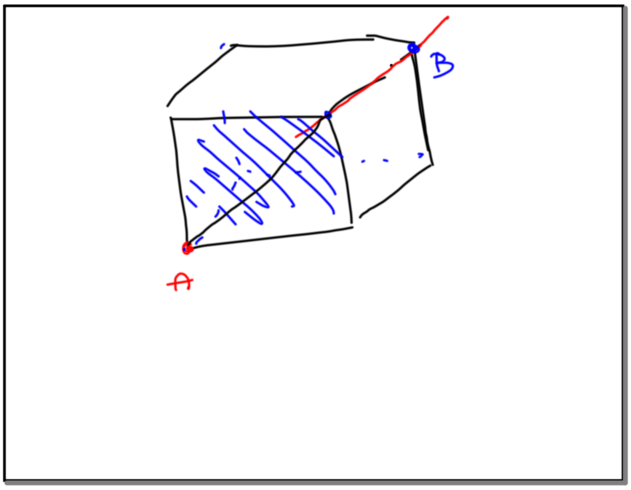
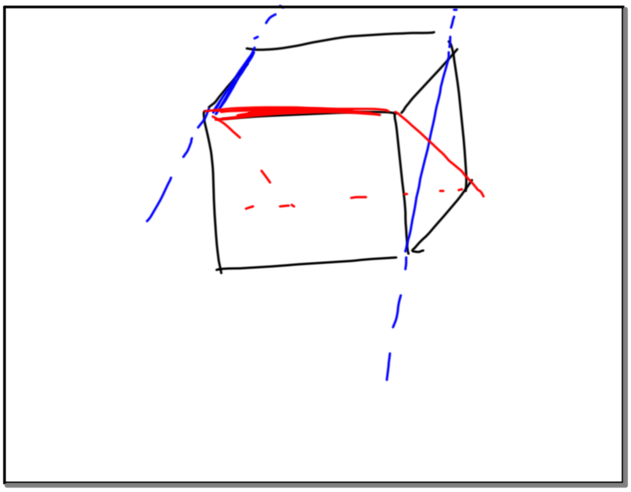


5 7-9:58



5 7-10:17

vektorový součin $u \times v = w$ tak, že
$\mathbb{R}^3 \times \mathbb{R}^3 \to \mathbb{R}^3$

$u \perp w, \quad v \perp w$

$u = (u_1, u_2, u_3)$

$v = (v_1, v_2, v_3)$

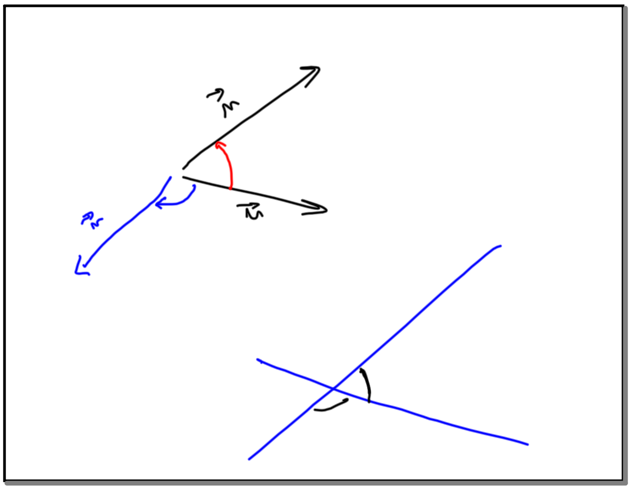
$$\begin{vmatrix} e_1 & e_2 & e_3 \\ u_1 & u_2 & u_3 \\ v_1 & v_2 & v_3 \end{vmatrix} = e_1(u_2 v_3 - v_2 u_3) - e_2(u_1 v_3 - v_1 u_3) + e_3(u_1 v_2 - v_1 u_2)$$

← báze $\mathbb{R}^3$

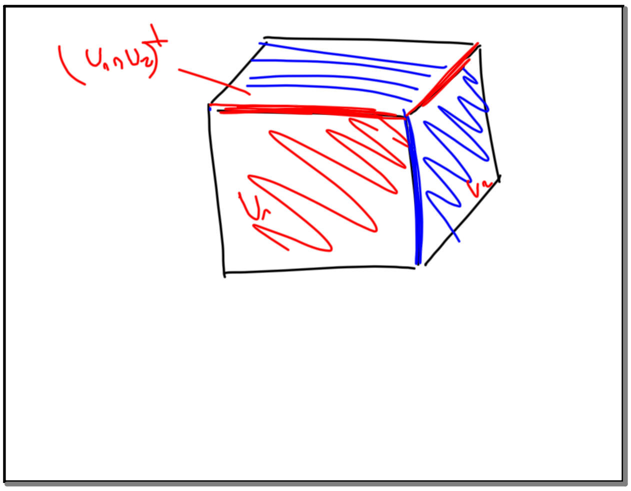
$$\begin{vmatrix} e_1 & e_2 & e_3 \\ -1 & 2 & 3 \\ -1 & -2 & 1 \end{vmatrix} = 8 \cdot e_1 - 2e_2 + 4e_3$$

$\Rightarrow w = (8, -2, 4)$

5 7-10:21



5 7-10:32



5 7-10:36

$$\begin{pmatrix} & A & \end{pmatrix} \begin{pmatrix} x_1 \\ \vdots \\ x_n \end{pmatrix} = \dots$$

5 7-10:40

$$\det\begin{pmatrix} a_{11}-\lambda & & & \\ & a_{22}-\lambda & & \\ & & \ddots & \\ 0 & & & a_{nn}-\lambda \end{pmatrix} = (a_{11}-\lambda)\dots(a_{nn}-\lambda) = 0 \Leftrightarrow$$

$$\lambda \in \{a_{11}, \dots, a_{nn}\}$$

5 7-11:20

$p(x) \in \mathbb{R}[x]$ má komplexní kořen $\lambda = \alpha + \beta i \Rightarrow$ má i kořen $\alpha - \beta i$

$$p(x) = a_n x^n + \dots + a_1 \cdot x + a_0 \qquad a_i \in \mathbb{R}$$

$$0 = p(\lambda)$$

$$0 = p(\lambda) = a_n \cdot \lambda^n + \dots + a_1 \cdot \lambda + a_0$$

$$\overline{0} = 0 = \overline{p(\lambda)} = \overline{a_n} \cdot \overline{\lambda}^n + \dots + \overline{a_1} \cdot \overline{\lambda} + \overline{a_0}$$

kde $\overline{a_i} = a_i$

$\Rightarrow \overline{\lambda}$ je kořen $p(x)$.

5 7-11:22

$u_1, \dots, u_n$ vlastní vektory L.N.

$\lambda_1, \dots, \lambda_n$

Mce lin. trace L_A

$$\begin{pmatrix} \lambda_1 & & 0 \\ & \ddots & \\ 0 & & \lambda_n \end{pmatrix} \begin{pmatrix} x_1 \\ \vdots \\ x_n \end{pmatrix}$$

5 7-11:33