$$A \cdot \underbrace{\frac{\tilde{A}^T}{|A|}}_{A^{-1}} = I_n$$

$F: \mathbb{K}^n \to \mathbb{K}$

$$b = \sum_{j=1}^{n} x_j a_j(A)$$

$$F(b, a_2(A), \ldots, a_n(A)) =$$

$$= \sum_{j=1}^{n} x_j F(a_j(A), a_2(A), \ldots, a_n(A)) = x_1 F(a_1(A), \ldots, a_n(A))$$

$$F(b, a_2(A), \dots, a_n(A)) = x_1 F(a_1(A), \dots, a_n(A))$$

$$x_1 = \frac{F(b, \dots, a_n(A))}{F(a_1(A), \dots, a_n(A))} \quad \text{ma} \neq 0$$

$$x_1 = \frac{|A^b_1|}{|A|}$$

$P \Longleftrightarrow Y$

(ii) $\Rightarrow$ (iii) $\quad n=0 \qquad \lambda_0 P_0 = P_0 \in M$

$\lambda_0 = 1$

$n=1$ idem

$\underline{n=2} \qquad \lambda_0+\lambda_1+\lambda_2 = 1 \quad , \quad \lambda_0 \neq 0 \neq \lambda_1 \quad \neq \lambda_2$

$\lambda_0 P_0 + \lambda_1 P_1 + \lambda_2 P_2 = \qquad \lambda_2 = 1-\lambda_0-\lambda_1$

$$= (\lambda_0+\lambda_1)\underbrace{\left(\overbrace{\underbrace{\frac{\lambda_0}{\lambda_0+\lambda_1}}_{\in M} P_0 + \frac{\lambda_1}{\lambda_0+\lambda_1} P_1}^{\in M}\right)} + \lambda_2 \underbrace{P_2}_{\in M} \qquad \cancel{\lambda_2 \neq 1}$$

$$\lambda_0 + \lambda_1 + \lambda_2 = 1, \quad \lambda_0 = \lambda_1 = \lambda_2 = 1$$

$$\lambda_0 + \lambda_1 = 0$$

$$1 = -1$$

$$2 = 0$$

$$\lambda_0 P_0 + \dots + \lambda_m P_m = \qquad \lambda_m \neq 1$$

$$\underbrace{(\lambda_0 + \dots + \lambda_{m-1}) \underbrace{\left( \sum_{j=0}^{m-1} \frac{\lambda_j}{\lambda_0 + \dots + \lambda_{m-1}} P_j \right)}_{\in M} + \lambda_m P_m}_{\in M}$$

$$\lambda_0 = \lambda_1 = \ldots = \lambda_n = 1 \qquad 1 + 1 + (-1) = 1$$

$$\lambda_0 + \quad + \lambda_{n-1} = 0$$

$$\lambda_0 + \quad + \lambda_{n-2} = -1 \qquad | \cdot (-1)$$

$$-\lambda_0 - \quad - \lambda_{n-2} = 1$$

$$(-1)\big(\underbrace{-\lambda_0 p_0 - \quad - \lambda_{n-2} p_{n-2}}_{\in M}\big) + 1 \cdot p_{n-1} + 1 p_n \in M$$

$\Rightarrow M$ ist AR, $P \in M$

$M - P \overset{?}{} \text{VR}$ $\qquad q_1, q_2 \in M$

$x, y \in M - P \qquad x = q_1 - P$

$\qquad\qquad\qquad\qquad y = q_2 - P$

$$x + y = (q_1 - P) + (q_2 - P) = (\underbrace{\overset{1}{q_1} \overset{(-1)}{-P} + \overset{1}{q_2}}_{\in M}) - P$$

$x \in M - p, \quad c \in K \stackrel{?}{\Rightarrow} c\,x \in M$

$x = q_1 - p$

$cx = \underbrace{(cq_1 - cp + p)}_{\in M} - p$

$\Leftarrow \quad \forall p: \; p + S \overset{?}{\subseteq} AP \qquad q = p + u, \; u \in S$

$r = p + v, \; v \in S$

$q, r \in p + S, \; \alpha, \lambda \in K, \; \alpha + \lambda = 1$

$\alpha q + \lambda r \overset{?}{\in} p + S; \quad = \alpha p + \alpha u + \lambda p + \lambda v =$

$= p + \underbrace{(\alpha u + \lambda v)}_{\in S}$

$$\lambda_0 p_0 + \lambda_1 p_1 + \quad + \lambda_n p_n \quad = (*)$$

$$\lambda_0 + \lambda_1 + \quad + \lambda_n = 1$$

$$(*) \; \underline{\lambda_0 p_0} + \lambda_1 (p_1 - p_0) + \lambda_2 (p_2 - p_0) + \dots$$

$$+ \lambda_n (p_n - p_0) + \underline{\lambda_1 p_0} + \dots + \underline{\lambda_n} p_0 =$$

$$= p_0 + \lambda_1 (p_1 - p_0) + \dots \quad + \lambda_n (p_n - p_0)$$

$$\underline{\ell(P_0,\dots,P_n) = P_0 + [P_1 - P_0, \dots, P_n - P_0]}$$

$P_0, \dots, P_n$ AN $\iff$ $P_1 - P_0, \dots, P_n - P_0$

și LN $\iff \dim[P_1 - P_0, \dots, P_n - P_0] = n \iff$

$\iff \dim \ell(P_0, \dots, P_n) = n.$

$\Rightarrow$ ZŘEJMÉ Z DEF.

$\Leftarrow$ $p \in M \cap N$ $\quad M = p + S$

$N = p + T$

$q \in M \cap N$ $\quad q = p + \underline{\underline{u}}, \; u \in S$

$\Rightarrow q \in p + (S \cap T)$ $\quad q = p + \underline{\underline{v}}, \; v \in T$

$M \cap N \subseteq \underline{p + (S \cap T)} \subseteq p + S, \; p + T \Rightarrow u = v \in S \cap T$

$\mathrm{Dir}\,M + \mathrm{Dir}\,N = V$

$\quad\;\; \| \qquad\qquad\;\; \|$

$M = p + S \qquad N = q + T$

$V \ni p - q = \underbrace{u}_{\in S} + \underbrace{v}_{\in T} \qquad n \in M \cap N$

$M \ni p + (-u) = \underbrace{q + v}_{n} \in N$

Průnik AP je AP $\iff$

Průnik je neprázdný.

$\emptyset \neq X$ $\quad \ell(X)$ nejmenší AP, která je daný

$M = \ell(p_0, \ldots, p_m) \qquad \dim M = m$

$N = \ell(q_0, \ldots, q_n) \qquad \dim N = n$

$M \sqcup N = \ell(p_0, \ldots, p_m, q_0, \ldots, q_n)$

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$S, T$ VP $\qquad S+T$ şi VP

$0 \in S \sqcup T$ VP $\qquad S \sqcup T \supseteq S+T \supseteq S \cup T$

$p \in M, \quad q \in N$

$$M \sqcup N = M + \Big(\overbrace{[q-p]}^{\in \mathrm{Din}(M \sqcup N)} + \mathrm{Din}\, N\Big)$$

$$\underline{\in \mathrm{Din}(M \sqcup N)} \qquad \in \mathrm{Din}(M \sqcup N)$$

$$\supseteq \underbrace{\Big[\; M = p + \mathrm{Din}\, M}_{g\mathrm{AP} \supseteq M, N}$$