$$A \equiv B, \; B \equiv C$$

$$B = P^T A P$$

$$C = Q^T B Q$$

$$C = (Q^T P^T) A (P Q)$$

$$C = (PQ)^T A (PQ)$$

$$
\begin{array}{c|c}
\begin{pmatrix} 1 & 2 \\ 2 & 3 \end{pmatrix} & \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix} \\ \hline
\begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix} & X
\end{array}
\qquad
S \;
\begin{array}{cc|cc}
1 & 0 & 1 & 0 \\
2 & -1 & 0 & 1 \\ \hline
1 & -2 & X & \\
0 & 1 & &
\end{array}
$$

$$
\sim \left(\begin{array}{cc|cc} 1 & 0 & 1 & 0 \\ 0 & -1 & -2 & 1 \end{array}\right)
$$

$A \equiv B$

$\underline{\underline{\alpha}}$ $\quad$ $\underline{\underline{\beta}}$ $\quad h = h(A) = h(B)$

$A =$ $\quad$ $B =$

$G(A) = (k, h-k, m-h)$

$G(B) = (l, h-l, m-h)$

$\alpha = (u_1, \dots, u_k, u_{k+1}, \dots, u_m)$

$\beta = (v_1, \dots, v_l, v_{l+1}, \dots, v_k, \dots, v_m)$

$S = [u_1, \dots, u_k],\ T = [v_{l+1}, \dots, v_m]$

$$\mathbb{x} = \sum_{i=1}^{k} x_i u_i \qquad \mathbb{x} \in S \Rightarrow q(\mathbb{x}) \geq 0$$

$$q(\mathbb{x}) = (x_1, \ldots, x_k, 0) \begin{pmatrix} a_{1,1} & & \\ & \ddots & \\ & & a_{k,k} \end{pmatrix} \begin{pmatrix} x_1 \\ \vdots \\ x_k \\ 0 \end{pmatrix} =$$

$$= \underbrace{a_{1,1}}_{>0} \underbrace{x_1^2}_{\geq 0} + \ldots + \underbrace{a_{k,k}}_{>0} \underbrace{x_k^2}_{\geq 0} \geq 0$$

$$\mathbb{x} \in T \qquad \mathbb{x} = \sum_{j=1}^{n-l} d_j v_{l+j}$$

$$q(\mathbb{x}) = \sum_{j=1}^{n-l} \underbrace{b_{l+j,l+j}}_{\leq 0} \underbrace{d_j^2}_{\geq 0} \leq 0$$

$\mathbf{x} \in S \cap T \qquad 0 \leq q(\mathbf{x}) \leq 0$

$\Rightarrow \underline{\underline{\mathbf{x} = \mathbf{0}}} \qquad \dim(S+T) \leq n$

$\qquad = \dim S + \dim T$

$= k + n - l \leq n \Rightarrow \boxed{k \leq l} \leq k$

$$\sum_{i=1}^{n} x_i^2 \quad , \quad \sum_{i=1}^{\cancel{n}\, k} x_i^2$$

$k < n$

$$(0, \ldots, 1)$$

$$\sum_{i=1}^{n} -x_i^2$$

$$x_1^2 - x_2^2$$

$(1, 0) > 0 \qquad (0, 1) < 0$

A po. def

$$A \equiv I_n$$

$$A = P^T I_n P$$

bře 2-11:22

$$\begin{pmatrix} 1 & \cdots & x \\ & \ddots & \\ & & 1 \end{pmatrix} \qquad A \to A_2$$

$$2 \times 2$$

A_n je reg. $\quad A \underset{(1*)}{\sim} B$ diagonální

$B = P^T A \cdot P$

horní Δ-matice

$(A \cdot P)_k = A_k P_k$

$B_k = P_k^T A_k P_k \qquad B_k$

B_k je reg. $\quad \det B_k = b_1 \cdots b_k \neq 0$

$$\begin{pmatrix} \underline{b_1} & & 0 \\ & \ddots & \\ 0 & & \underline{b_k} \quad 0 \end{pmatrix} \qquad \frac{b_1 \cdot b_2 \cdot b_3}{b_1 \cdot b_2}$$

(iii) $|A_k| \neq 0 \quad 1 \leq k \leq l$

$$\begin{pmatrix} \neq 0 & 0 \\ 0 & \end{pmatrix}$$