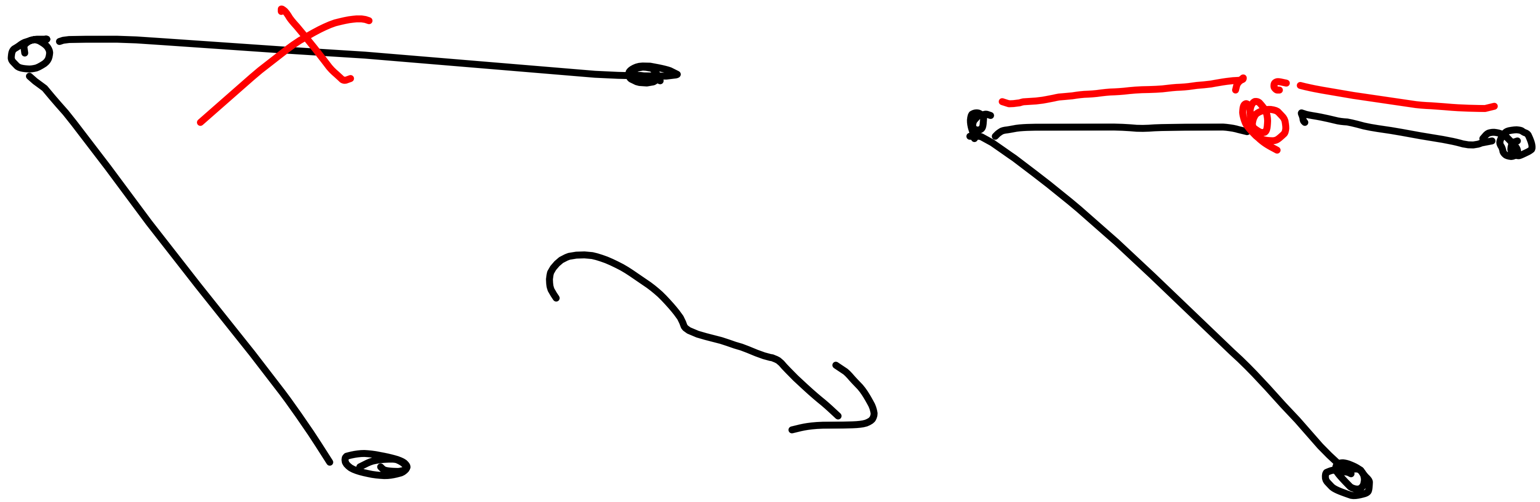
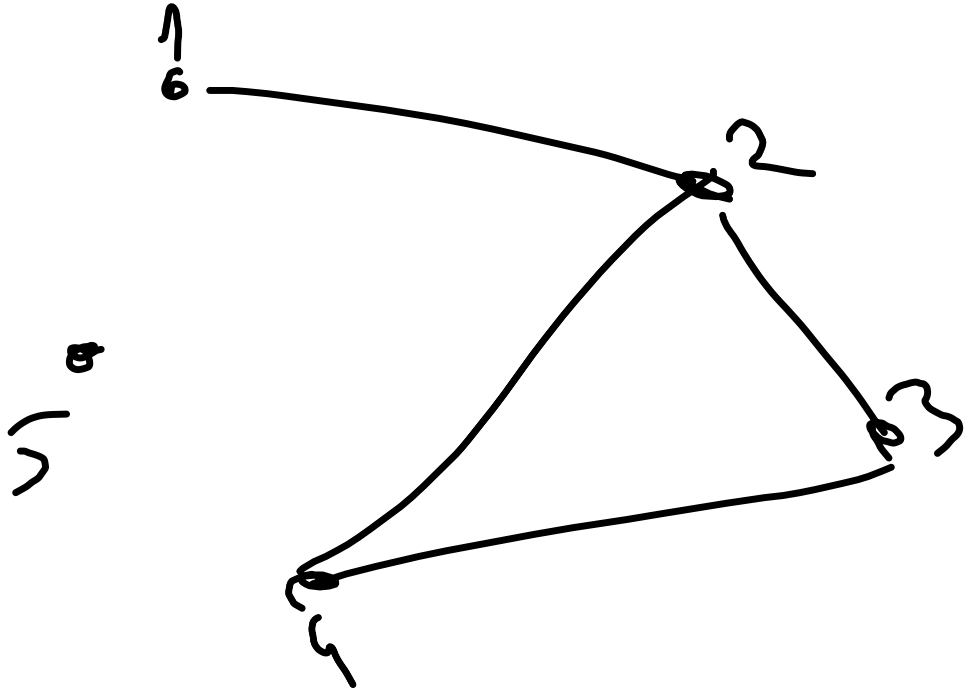


$$A_6^2 = A_6 \cdot A_6$$

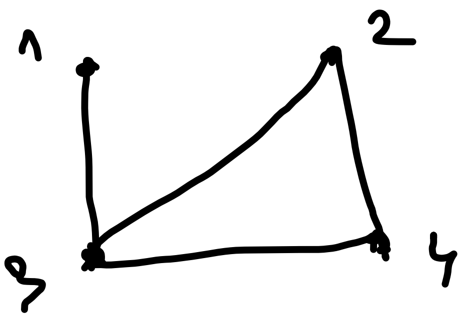
$$A_6^k = A_6^{k-1} \cdot A_6$$

$$\begin{pmatrix} 0 & 1 & 0 & 0 & 0 \\ 1 & 0 & 1 & 1 & 0 \\ 0 & 1 & 0 & 1 & 0 \\ 0 & 1 & 1 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 \end{pmatrix}$$



$$\begin{pmatrix} 0 & 0 & 1 & 0 \\ 0 & 0 & 1 & 1 \\ 1 & 1 & 0 & 1 \\ 0 & 1 & 1 & 0 \end{pmatrix} \cdot \begin{pmatrix} 0 & 0 & 1 & 0 \\ 0 & 0 & 1 & 1 \\ 1 & 1 & 0 & 1 \\ 0 & 1 & 1 & 0 \end{pmatrix} =$$

$$= \begin{pmatrix} 1 & 1 & 0 & 1 \\ - & - & - & - \end{pmatrix}$$



Dk: indukcí podle k

$(a_{ij}^{(k)})$ ... počet sledů z v_i do v_j délky **právě** k

$k=1$: $A_G^1 = A_G$ zřejmé

Předp. platnost pro sledy délky k, dok. pro $k+1$

je $a_{ij}^{(k+1)}$

$v_i \dots w$ je sled délky k

Počet sledů z v_i do v_ℓ délky k

je $a_{i\ell}^{(k)}$.

Počet sledů z v_i do $\underbrace{v_j}^{\text{délky } k+1}$ s předp. vrcholem

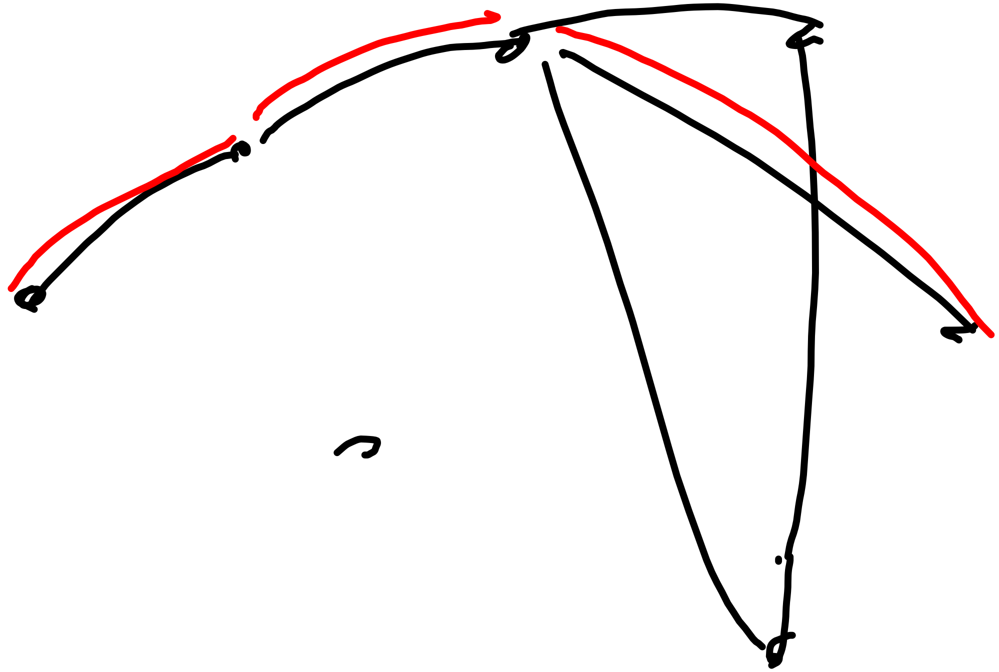
v_ℓ je $a_{i\ell}^{(k)} \cdot a_{\ell j}$

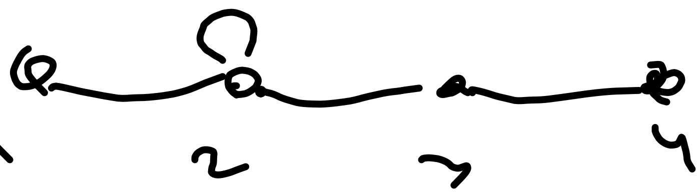
Celkem sledů délky $k+1$ z v_i do v_j

je $\sum_{\alpha=1}^{n} a_{i\alpha}^{(k)} \cdot a_{\alpha j} = a_{ij}^{(k+1)}$

$(A_G^{(k)} \cdot A_G)_{ij}$

A^{m-1}_{6}





$$(A+I_n)^{n-1} = \underline{A}^{n-1} + \underbrace{\binom{n-1}{1}}\underline{A}^{n-2} + \dots$$

$$\dots + \binom{n-1}{n}\underline{A} + I_n$$

$$A \cdot I_n \cdot A \cdot I_n = A^2$$

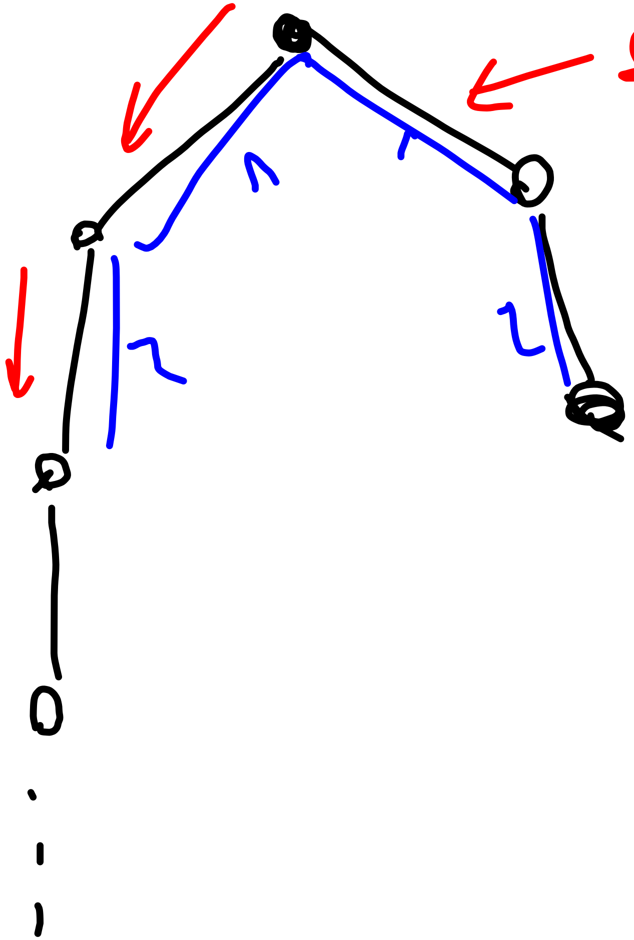
Binom. věta:

$$(a+b)^n = a^n + \binom{n}{1}a^{n-1}\cdot b + \dots + \binom{n}{n-1}ab^{n-1} + \dots + b^n$$

$$(a+b)(a+b)\dots(a+b) =$$

prohl. do hloubky

sem nepřijdeme



do šířky

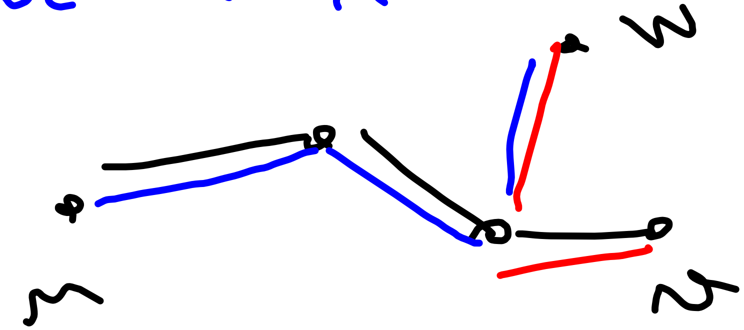
$v \sim w$

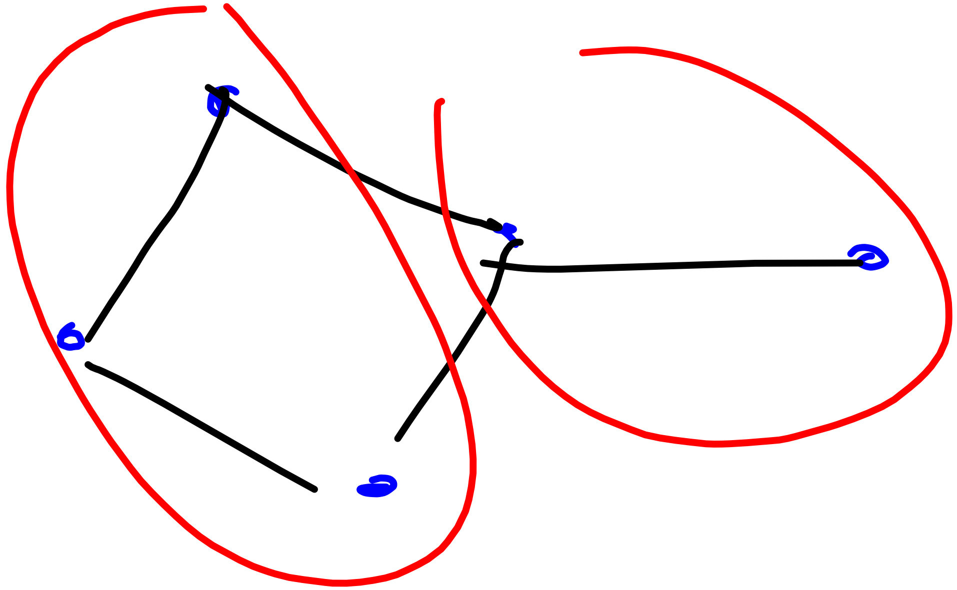
$\sim$ je ekvivalence $\iff$ R, S, T

$v \sim v$ R

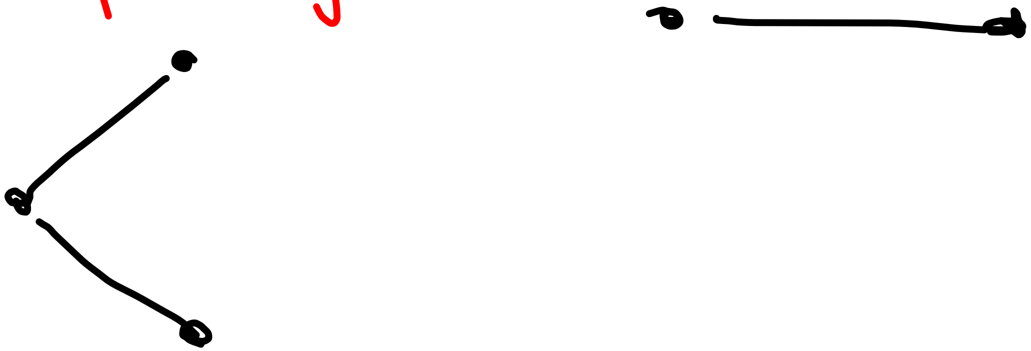
$v \sim w \Rightarrow w \sim v$ S

$u \sim v \wedge v \sim w \Rightarrow u \sim w$ T



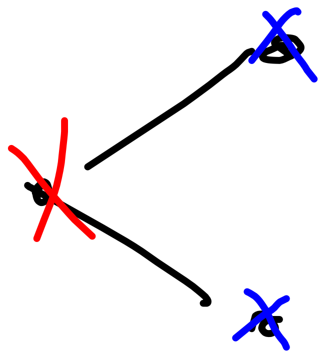


Ind. podgraf

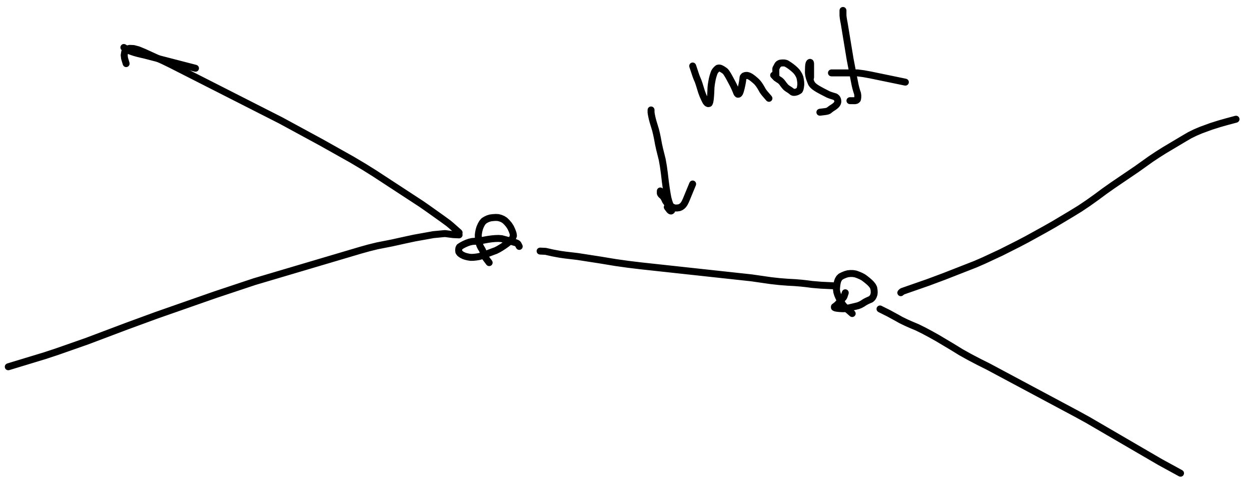


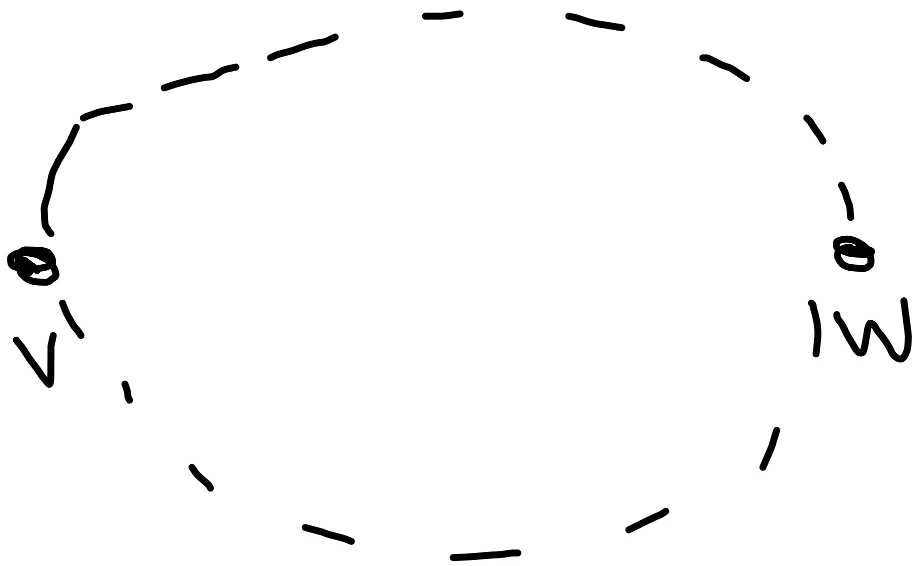
vrcholově 2-souvislý graf

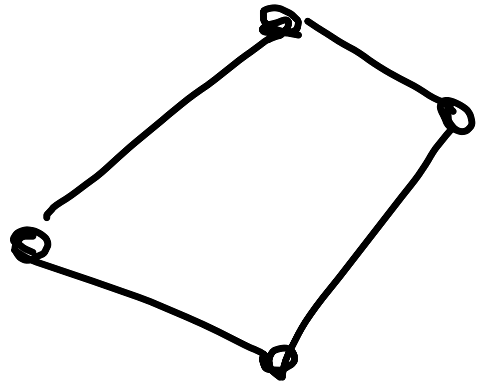
≥ 3 vrcholy

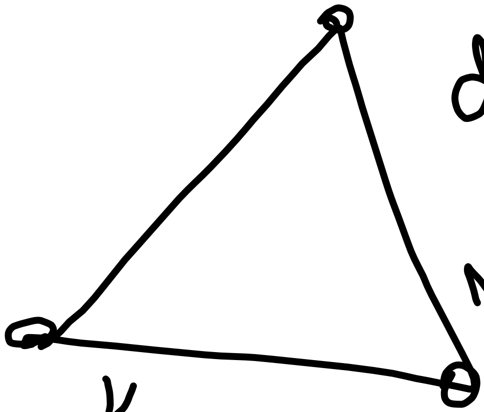


není 2-souvislý







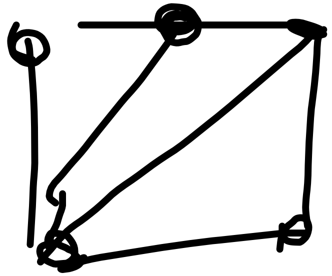


K_3

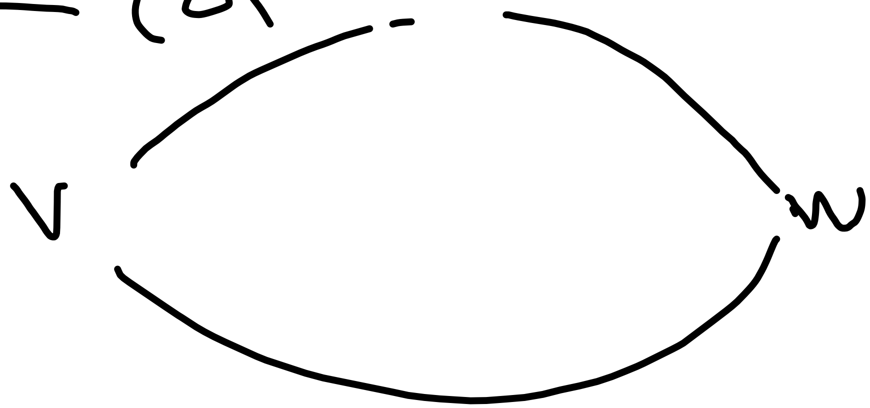
dělení

nebo přidávání

hran



$(1) \Leftarrow (2)$

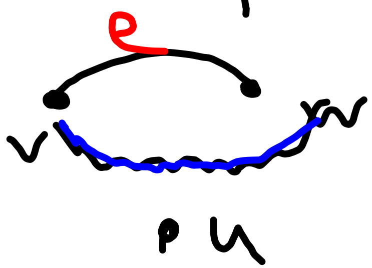


$\Rightarrow$ G je 2-souvislý

$(1) \Rightarrow (2)$

Dk: indukcí přes délku k nejkratší cesty z v do w:

k=1:



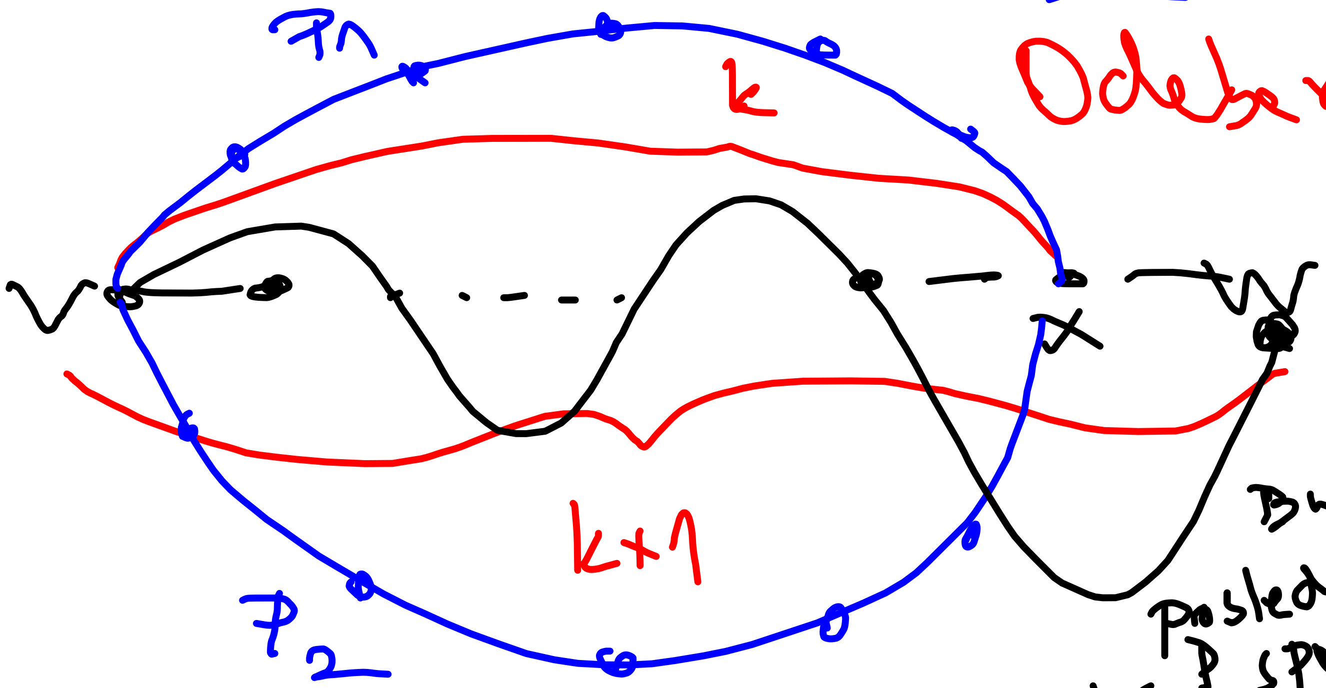
~~$G \setminus w$ je souvislý~~

$G - e$ je souvislý (neboť $G \setminus v$ i $G \setminus w$ je souvislý)

Ind. krok: předp. že tvrzení platí pro k, dokážeme pro $k+1$

2 IP $\Rightarrow$ v, x leží na spol. kružnici $\Rightarrow$ 2 cesty P_1, P_2

Odebereme x:



Buď y poslední uzel na P společný s P_1 nebo P_2. (Bůno P_1).

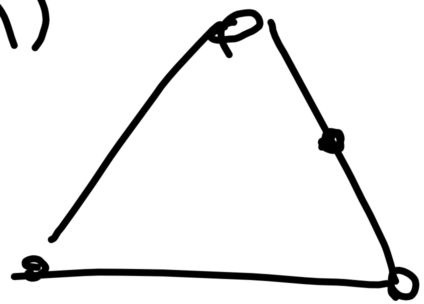
Existuje P z v do w v $G \setminus x$.

kružnice:

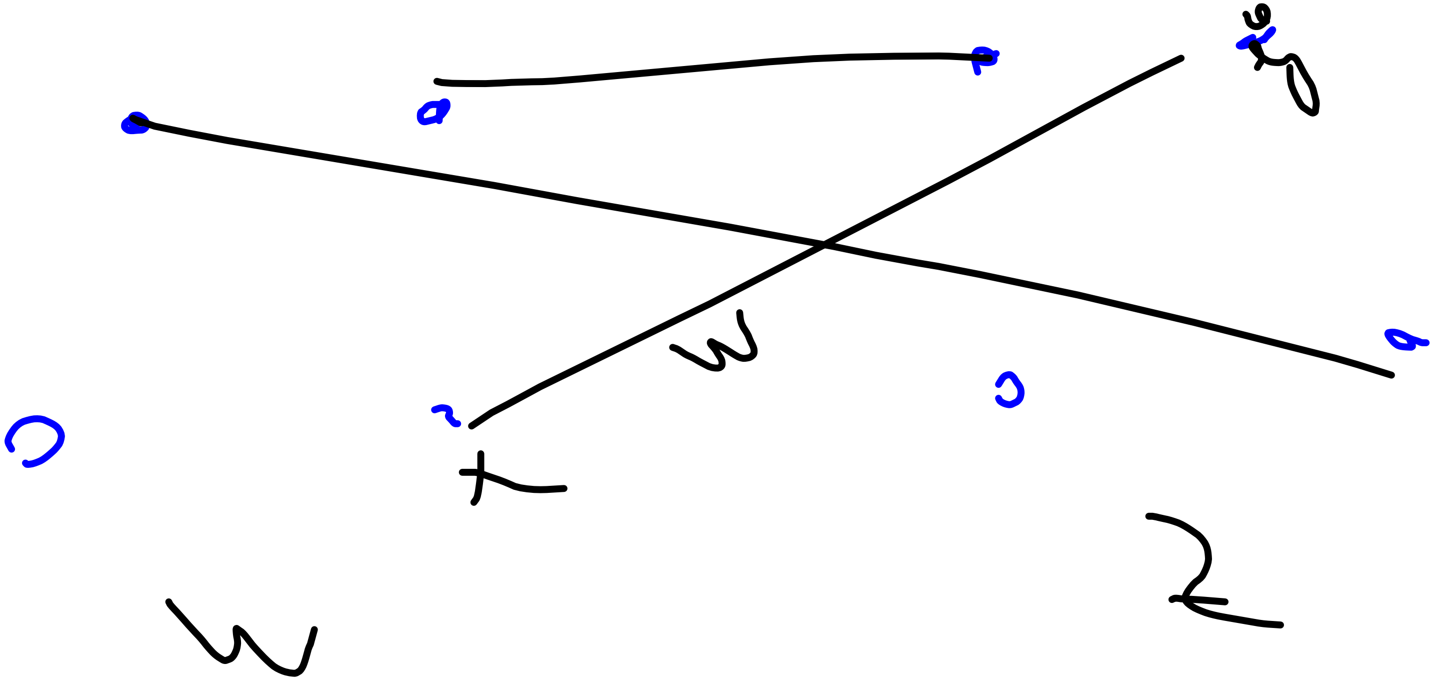
$$v \xrightarrow{P_1} x \longrightarrow w \xrightarrow{P} y \xrightarrow{P_2} v.$$

$(1) \Rightarrow (3)$ viz [M.N]

$(3) \Rightarrow (1)$



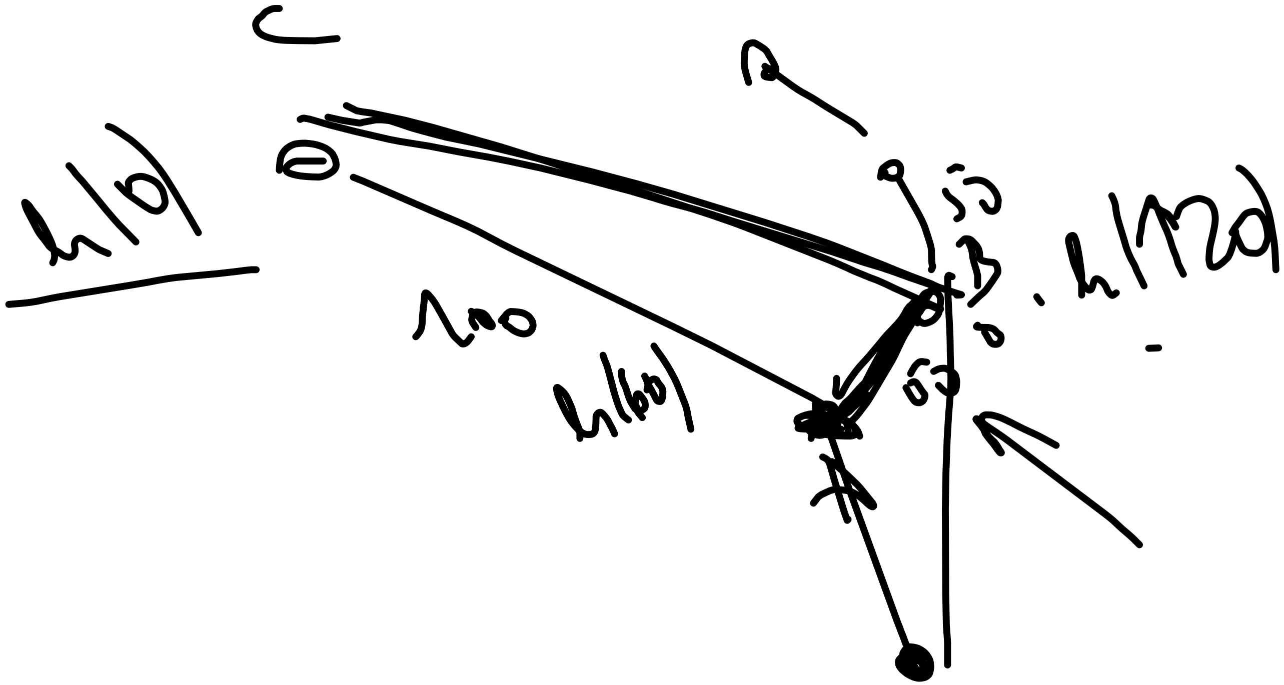
dělením ani přidáním hran 2-souvislost nepo-rušíme.



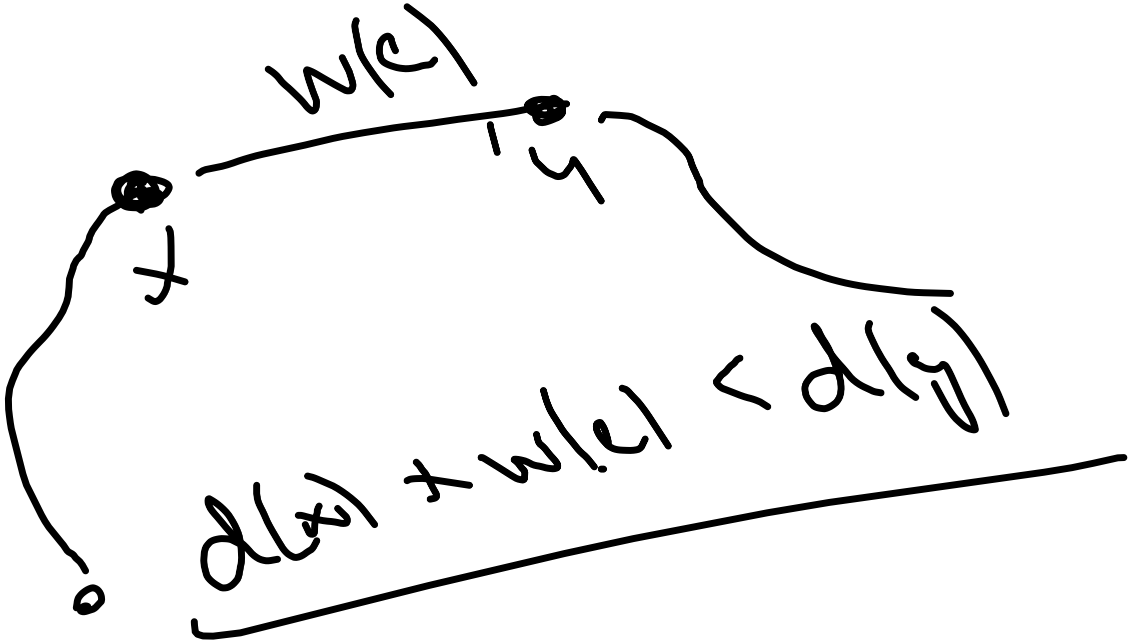
$$d(y) \geq w + d(x)$$

$d(v) \geq d_u(v)$

heuristika



$|V|-1$ krát



1, ... k − 1