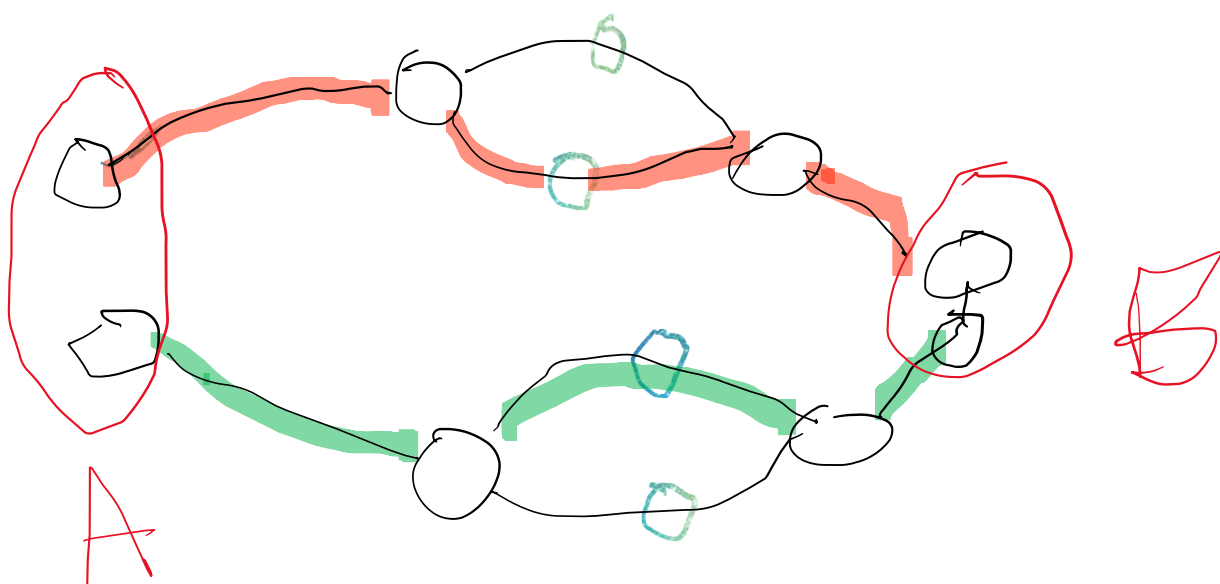
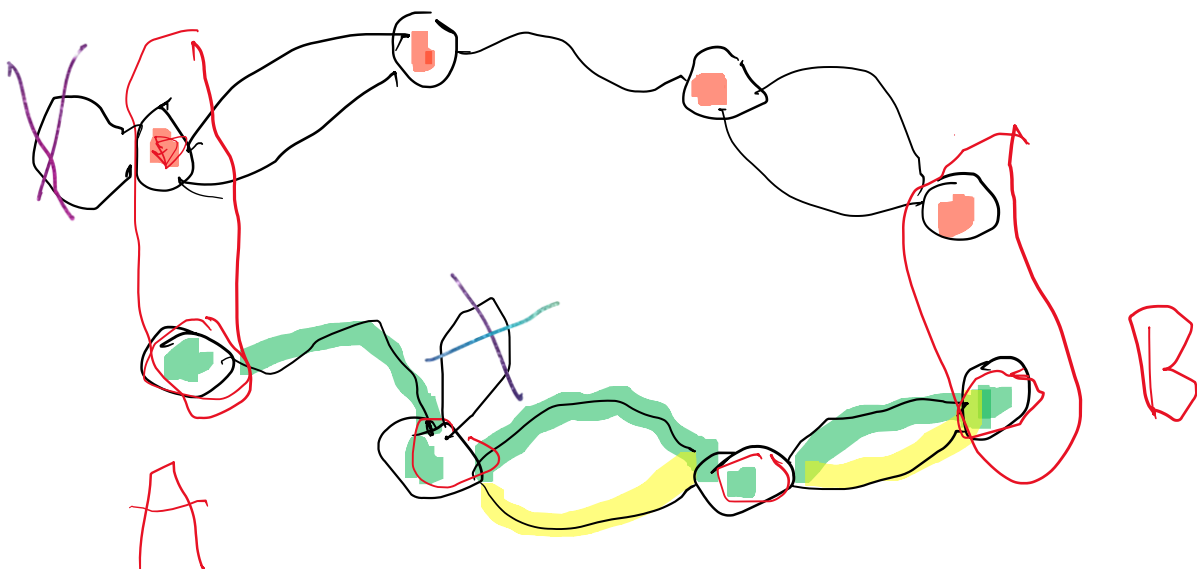
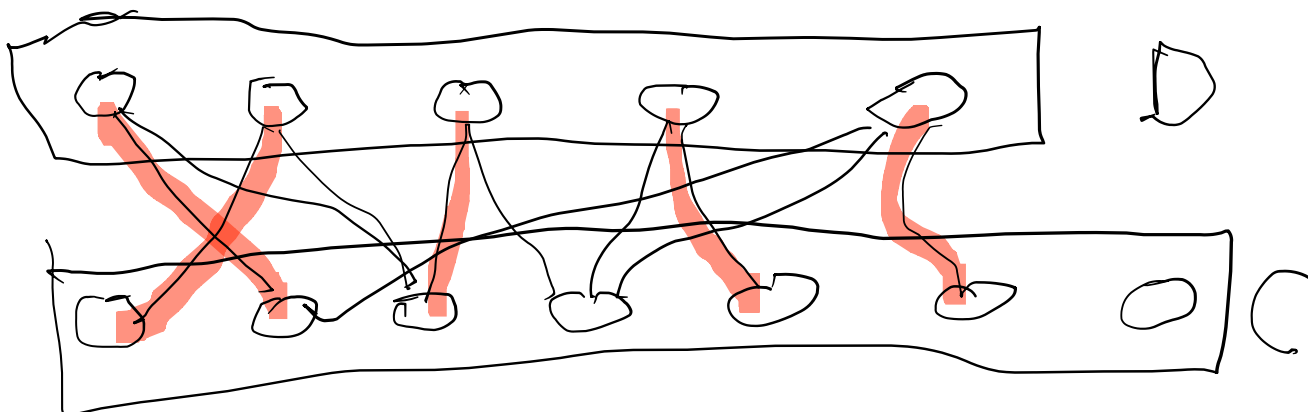


Twierdzenie Menger'a – dla dowolnych grafów



Twierdzenie Hall'a



$$f: D \xrightarrow{1-1} C : \{d, f(d)\} \in E$$

pełna skończ.

$$G = G(D, E)$$



$$N(X) = \{c \in C : (\exists x \in X) \{x, c\} \in E\}$$

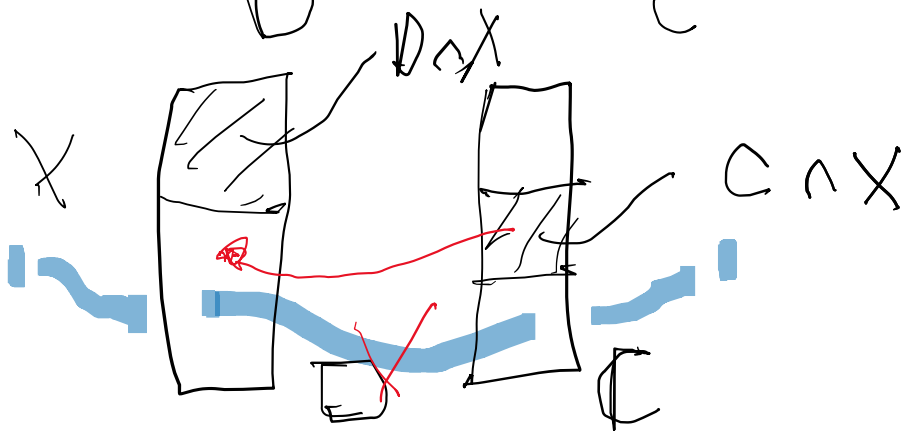
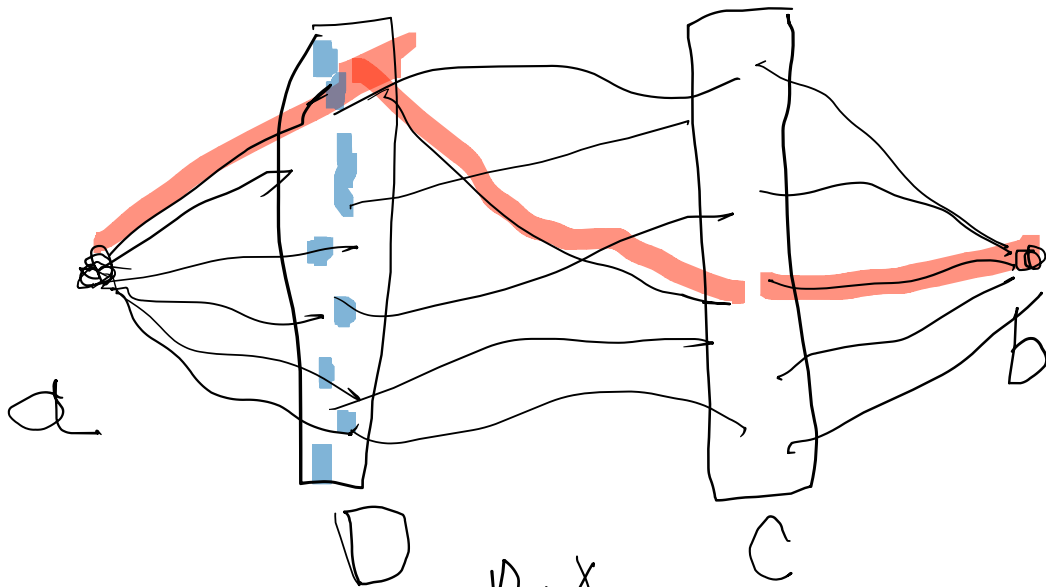
$$f: D \xrightarrow{1-1} C \quad |X| \leq |N(X)|$$

$(\forall X \subseteq D)$

Tw. \exists pełne skroj

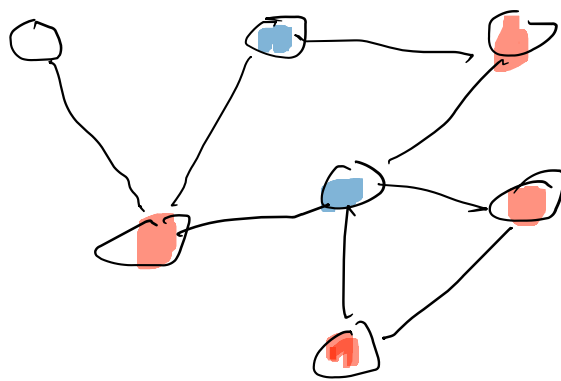
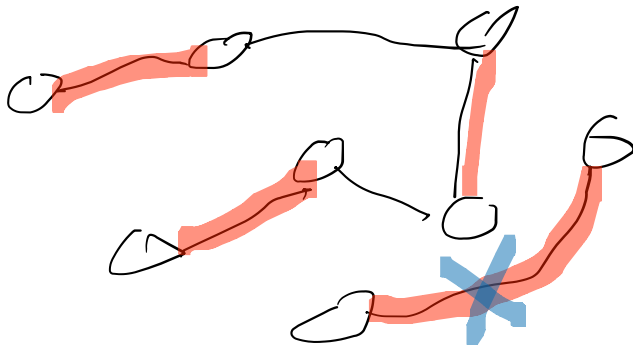
\Leftrightarrow

$$(\forall X \subseteq D) (|X| \leq |N(X)|)$$



$$|D| = |D \cap X| + |D \setminus X| \leq |D \cap X| + |N(D \cap X)| = |D \cap X| + |C \cap X| = |X| \leq |X|$$

SKOJARZENIA, POKRYCIE WIERZCHOŁKOWE



$$z(G) = \min \{ |X| : X \text{ - pokr. wierz.} \}$$

$$v(G) = \max \{ |\mathcal{E}| : \mathcal{E} \text{ - skrajn.} \}$$

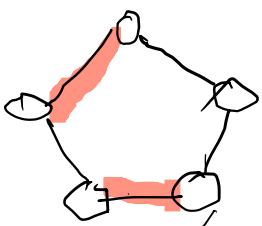
$$v(G) \leq z(G) \leq 2 \cdot v(G)$$

Tw (König) G - dwuczelnny

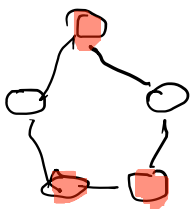


$$v(G) = z(G)$$

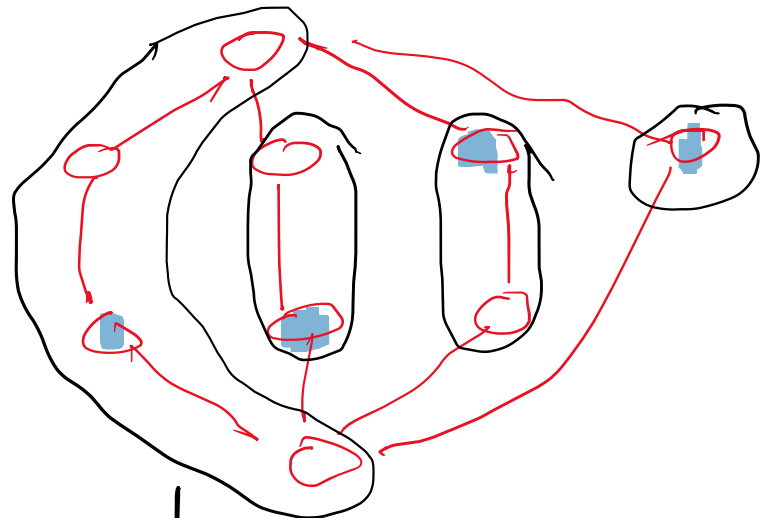
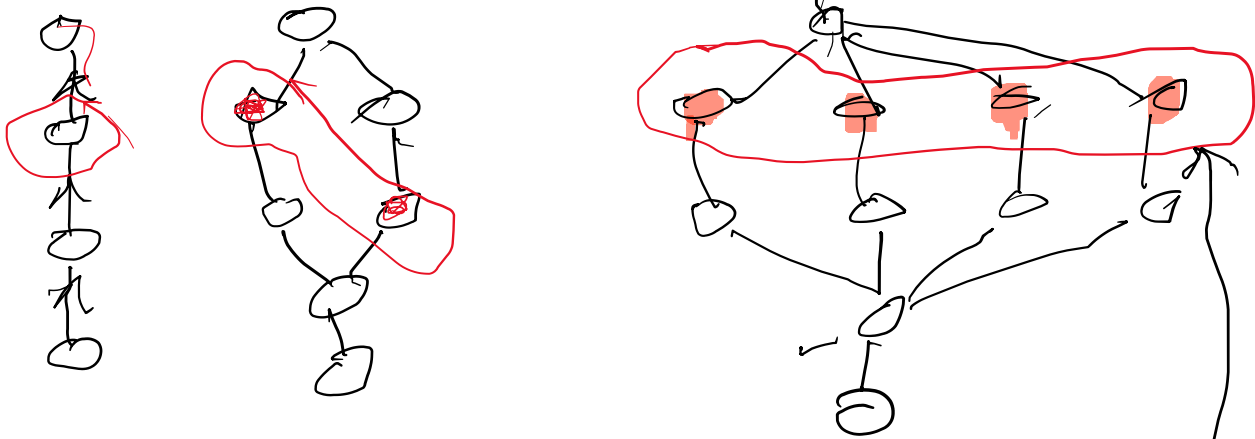
$$z(C_5) = 3$$



$$v(C_5) = 2$$



TWIERDZENIE DILWORTH'a



only \rightarrow chain

n-anty.

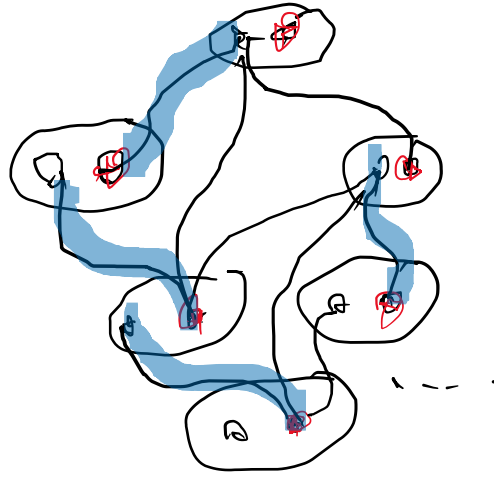
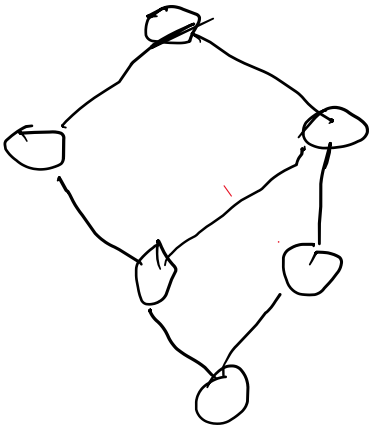
chain arch

$$f: A \xrightarrow{1-1} \mathcal{L} \quad |A| \leq |\mathcal{L}|$$

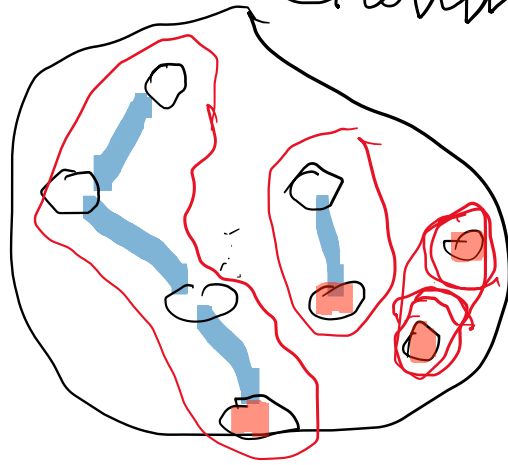
TW (Dilworth'a)

$$\max \{ |A| : A \text{ - only chain} \}$$

$$\min \{ |\mathcal{L}| : \mathcal{L} \text{ - pokrycie } \rightarrow \text{ łańcuch} \}$$



dowodujemy



$$|K| = |V| - |M|$$

Tw Königa!!!

↑ skoż.