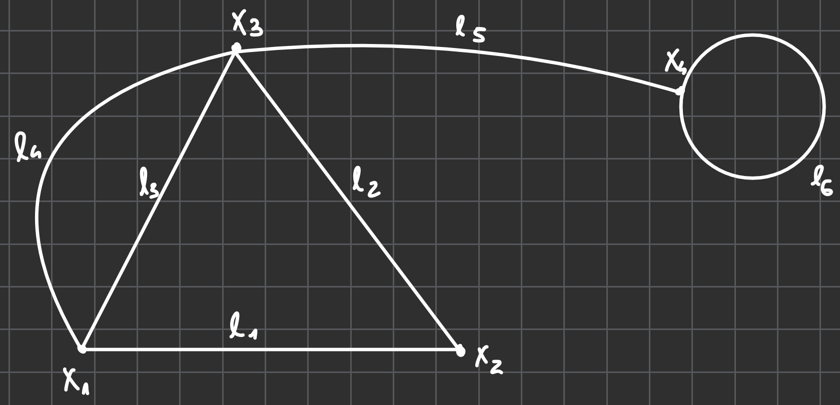


$G = (V, E, g)$ → relații între noduri și muchii

E → mulțimea muchiilor

V → mulțimea vârfurilor

$V \neq \emptyset$

E, $E \cap V = \emptyset$

$g : E \to V \otimes V$

$A \times B = \{\{a, b\} \mid a \in A \wedge b \in B\}$

$A \otimes B = \{\{a, b\} \mid a \in A, b \in B \vee a \in B, b \in A\}$

$g(l_1) = \{x_1, x_2\}$

$g(l_6) = \{x_4, x_4\}$ bucla

$g(l_2) = g(l_3) = \{x_1, x_3\}$ muchii paralele

$g^{-1}(a, b) = \{l \in E \mid g(l) = \{a, b\}\}$ mulțimea muchiilor care leagă două vârfurile a și b

$I_G(x) = \{e \in E \mid \exists y \in V, y \neq x, g(e) = \{x, y\}\}$ mulțimea muchiilor incidente în vârful x

$\mathcal{L}_G(x) = \{e \in E \mid g(e) = \{x, x\}\}$ mulțimea loop

$d(x)$ - gradul vf x

$d(x) = |I_G| + 2 \cdot |\mathcal{L}_G|$

$d(x) = 0 \Rightarrow$ vf izolat

$d(x) = 1 \Rightarrow$ extremitate

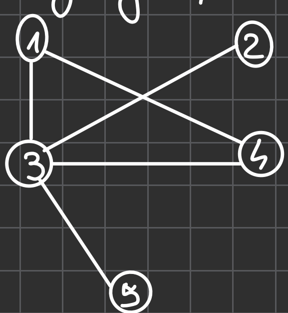
graf simplu, neorientat, neponderat

multigraf fără bucle și muchii paralele

$|g^{-1}(a,b)| \leq 1 \ \forall a, b \in V$

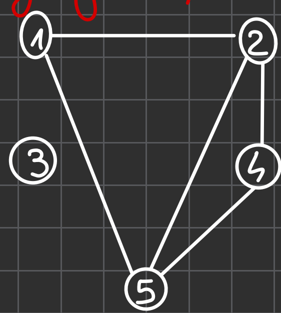
pot scrie $\{a,b\}$ în loc de $g(e) = \{a,b\}$

graf inițial



G

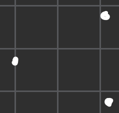
graf complement



$\overline{G}$

graf nul, $n, m \in \mathbb{N}$

$G = N_n$



$V = \{1, \dots, n\}$

$E = \emptyset$

graf linie, $n \geq 2$

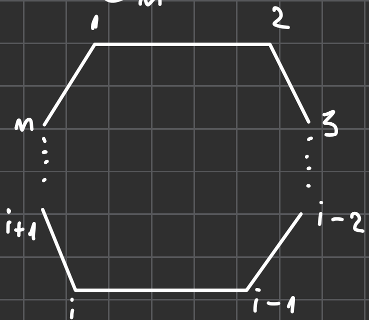
$G = P_n$

$V = \{1, \dots, n\}$

$E(P_n) = \{\{1,2\}, \{2,3\}, \dots, \{n-1, n\}\}$

graf ciclu $n \geq 3$

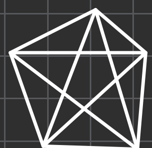
$G = C_n$



graf complet

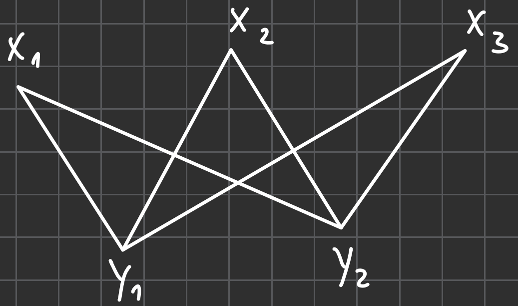
$G = K_n$

K_3



K_5

graf bipartid complet

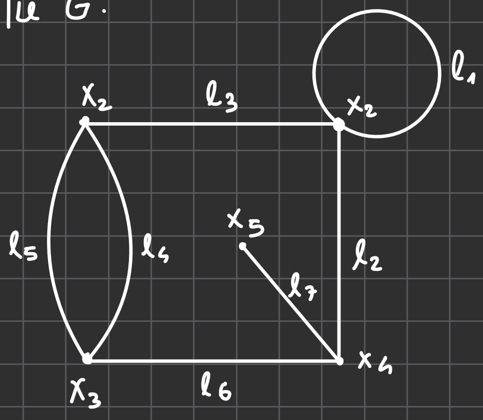


$K_{3,2}$

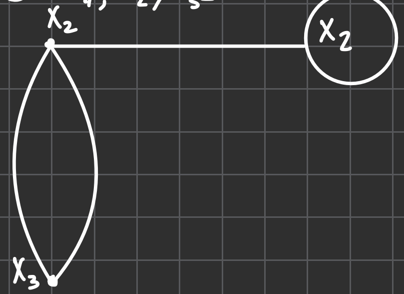
$V(K_{n,m}) = \{x_1, \dots, x_n\} \cup \{y_1, \dots, y_m\}$

$E(K_{n,m}) = \{\{x_i, y_j\} \mid 1 \le i \le n, 1 \le j \le m\}$

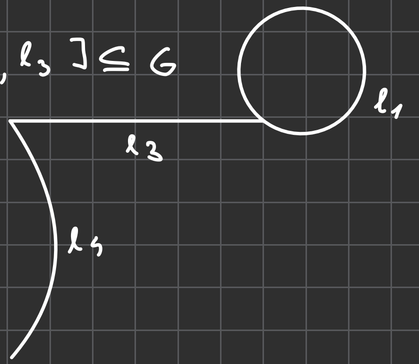
Fie G:



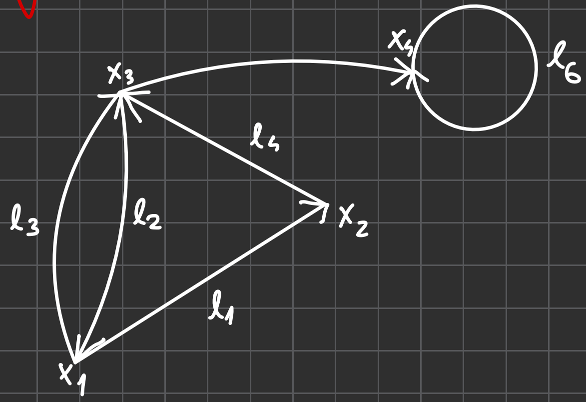
$G[x_1, x_2, x_3] \subseteq G$



$G[l_1, l_2, l_3] \subseteq G$



multigraf orientat



$\vec{G} = (V, E, \eta)$

$V \neq \emptyset$

$E \cap V = \emptyset$

$\eta : E \to V \times V$

Fie $G = (V, E, \eta)$ și $x \in V$

subgradul interior $d^-(x)$

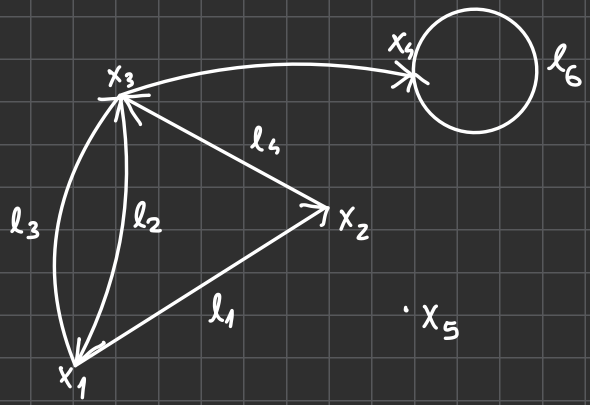
$d^-(x) = \{ e \in E \mid \eta(e) = \{y, x\}, \forall y \in V \}$

subgradul exterior $d^+(x)$

$d^+(x) = \{ e \in E \mid \eta(e) = \{x, y\}, \forall y \in V \}$

$d(x) = d^-(x) + d^+(x)$

Exemplu:



$d^-(x_1) = 1$ $\quad$ $d^+(x_1) = 2$

$d^-(x_2) = 1$ $\quad$ $d^+(x_2) = 1$

$d^-(x_3) = 2$ $\quad$ $d^+(x_3) = 2$

$d^-(x_4) = 2$ $\quad$ $d^+(x_4) = 1$

$d^-(x_5) = 0$ $\quad$ $d^-(x_5) = 0$

$$\sum d^+(x) = \sum d^-(x) = |E(G)|$$