

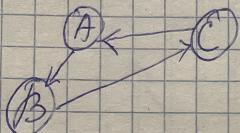
Exo 7

Task 1.

1. Directed Graph with Transposed

$$V = \{A, B, C\}$$

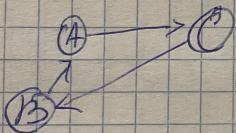
$$E = \{(A, B), (B, C), (C, A)\}$$



Transposed

$$V = \{A, B, C\}$$

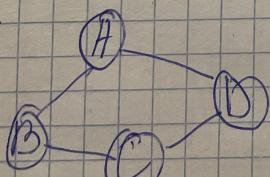
$$E = \{(B, A), (C, B), (A, C)\}$$



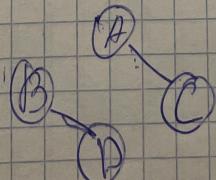
2. Undirected and Inverse Graphs

$$V = \{A, B, C, D\}$$

$$E = \{(A, B), (B, C), (C, D), (D, A)\}$$



$$E_G = \{(A, B), (B, C), (C, D), (D, A)\}$$



Transposed

3. if the original graph G is dense, the inverse graph \bar{G} will be sparse.

since the edges of G plus the edges of \bar{G} equal the edges of the complete graph, a high number of edges in G forces a low number of edges in \bar{G} .

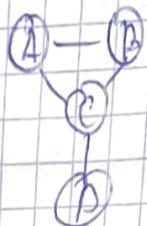
4. Undirected Dual Graph

$$E = \{(B, A), (C, B), (A, C)\}$$



Problem 2

$$V = \{A, B, C, D\} \quad E = \{AB, AC, BC, CD\}$$



$\{A, B, C\} \rightarrow AB, AC \rightarrow$ clique

$\{A, B, D\} : AD \rightarrow$ not a clique

$\{A, C, D\} : AD \rightarrow$ not a clique.

$\{B, C, D\} : BD$ does not exist \rightarrow not a clique

Max clique = $\{A, B, C\}$.