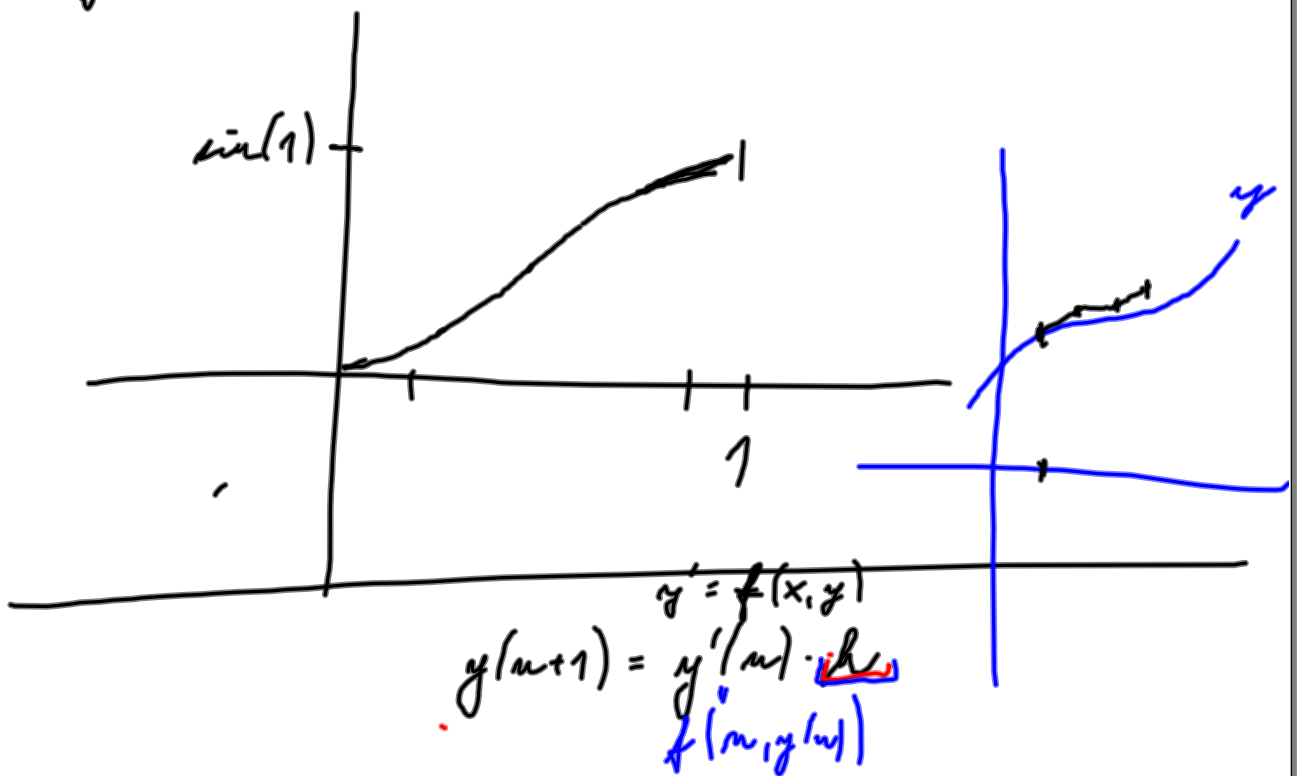


$$\int_0^1 \sin(x^2) dx$$



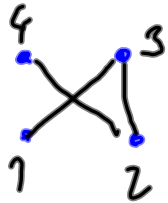
# Grafy

$$G = (V, E) \quad , \quad E \subset V \times V$$

## Reprezentace grafů

a) seznam vrcholů, seznam hran  
(při podobné úpravě prováděné uložení)

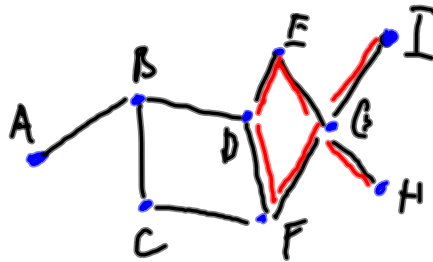
b) matice sousednosti



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

Prüfungsaussagen:

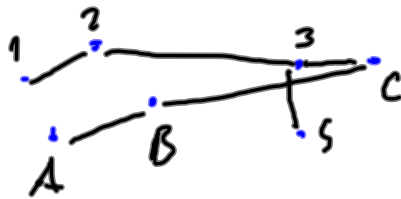
střed, cesta, kružnice, souvislost, komponenta,  
stupně vrcholu, stupně souvislosti, ...



střed: A B ~~D~~ B C

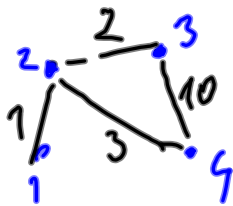
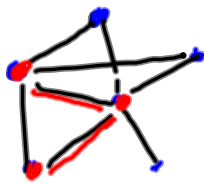
cesta: ABC

H G E D F G I  
(nemí) cesta  
(je)



Yron: (Lonecny)  
souvislý graf bez kružnic.

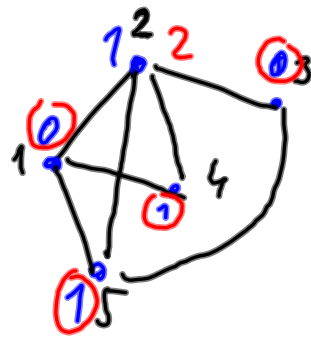
Podgraf



Kostka (souvislý) grafu:  
podgraf, který je stromem  
a obsahuje všechny vrcholy  
daného grafu.

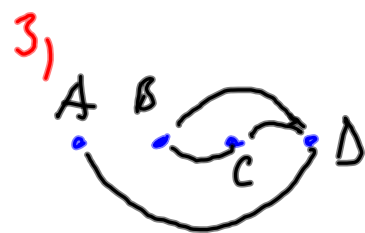
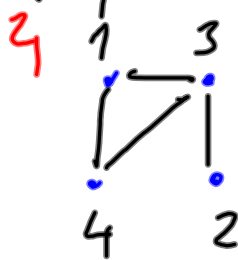
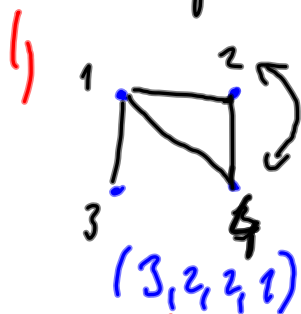
$$\begin{pmatrix} 0 & 1 & 0 & 0 \\ 1 & 0 & 2 & 3 \\ 0 & 2 & 0 & 10 \\ 0 & 3 & 10 & 0 \end{pmatrix}$$

X	1	X	1	X
1	X	2	X	1
X	3	X	3	X
3	X	6	X	3
X	9	X	9	X



$$\begin{pmatrix} 0 & 1 & 0 & 1 & 1 \\ 1 & 0 & 1 & 1 & 1 \\ 0 & 1 & 0 & 0 & 1 \\ 1 & 1 & 0 & 0 & 0 \\ 1 & 1 & 1 & 0 & 0 \end{pmatrix} \begin{pmatrix} 0 & 1 & 0 & 1 & 1 \\ 1 & 0 & 1 & 1 & 1 \\ 0 & 1 & 0 & 0 & 1 \\ 1 & 1 & 0 & 0 & 0 \\ 1 & 1 & 1 & 0 & 0 \end{pmatrix} = \begin{pmatrix} 3 & 2 & 2 & 1 & 1 \\ 2 & & & & \\ 2 & & & & \\ 1 & & & & \\ 1 & & & & \end{pmatrix}$$

## Isomorfismus grafů



Isomorfismus mezi grafy 1) a 3):

$$f(A) = 3$$

$$f(B) = 2$$

$$f(C) = 4$$

$$f(D) = 1$$

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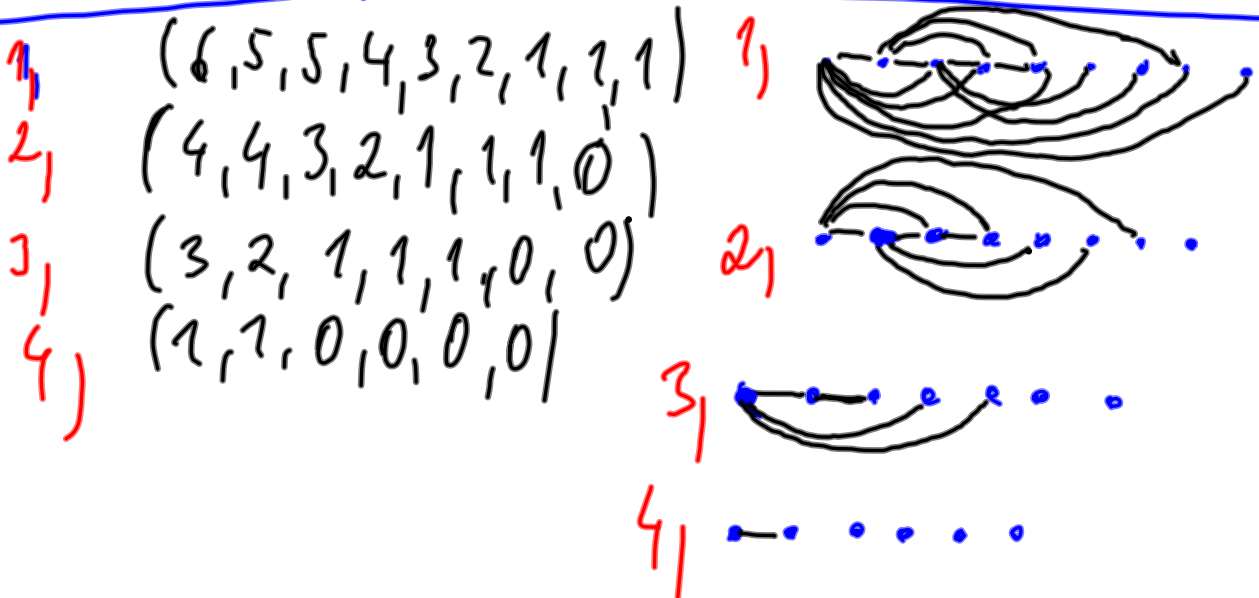
Uvědomte si podmínky pro to, aby  
grafy byly isomorfní:  
at stejné stare

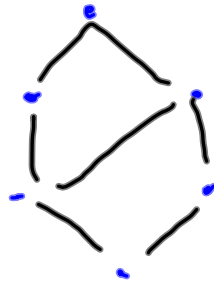
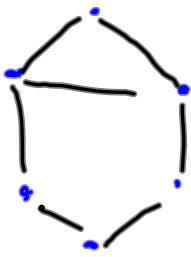
Je li uvijek moguće izdati neki graf s predpisanim  
stepenima.

$(6, 5, 5, 4, 3, 2, 1)$

$(4, 4, 3, 2, 1, 0)$

$(3, 2, 1, 0, 0)$  ← graf s tim stepenima ne postoji  
⇒ ne postoji graf sa stepenima  $(6, 5, 5, 4, 3, 2, 1)$

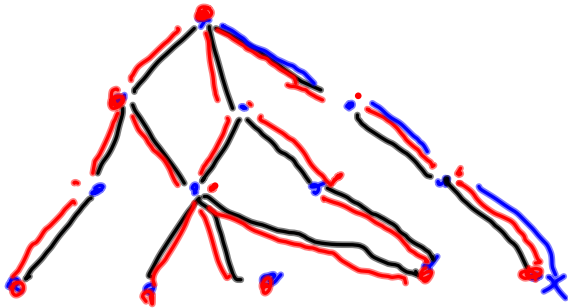




$(3, 3, 2, 2, 2, 2)$

Neizomorfní grafy se stejným složením.

$\bar{J}$ :



$H$ :

