

2021. Jun 2 Grupa 2

1a) $(\sqrt[11]{a^2 x^5} - \sqrt[5]{\frac{1}{ax^2}})^{13} \cdot x^{\frac{5k_1}{11}} + x^{-\frac{2k_2}{5}} = x^0$

$$25k_1 - 22k_2 = 0 \quad k_2 = 13 - k_1$$

$$(25 - 22)k_1 = 22 \cdot 13$$

$$3k_1 = 22 \cdot 13 \quad \nexists \text{ Ne postoji}$$

1b) 6 niske, 4 slova, Svaka niska ima dva ista slova: $\binom{Br \text{ niske}}{6}$

$$\frac{a}{a_1} \frac{c}{a_2} \frac{d}{a_3} \frac{a}{a_4} \quad \binom{26}{3} \cdot 3 \cdot \frac{4!}{2!} = \binom{26}{3} \cdot 12 \cdot 3$$

1v) 52 karte 5 izvlačimo $\underbrace{x^\spadesuit} \underbrace{x^\heartsuit} \underbrace{y^\diamondsuit} \underbrace{y^\clubsuit} \underbrace{y^\spadesuit}$

$$52/4 = 13 \quad \binom{4}{2} \cdot 13 \cdot \binom{4}{3} \cdot 12$$

2. $3a_{n+2} - 2a_{n+1} - a_n = 0 \quad a_1 = 1, a_0 = 0$

$$3 \frac{A(x) - 0 - x}{x^2} - 2 \frac{A(x)}{x} - A(x) = 0$$

$$A(x) \left(\frac{3}{x^2} - \frac{2}{x} - 1 \right) = \frac{3}{x} = A(x) \left(\frac{3 - 2x - x^2}{x^2} \right) = \frac{3}{x}$$

$$A(x) \cdot \frac{(x+3)(1-x)}{x} = 3 \rightarrow A(x) = \frac{3x}{(x+3)(1-x)}$$

$$3x = A - Ax + Bx + 3B$$

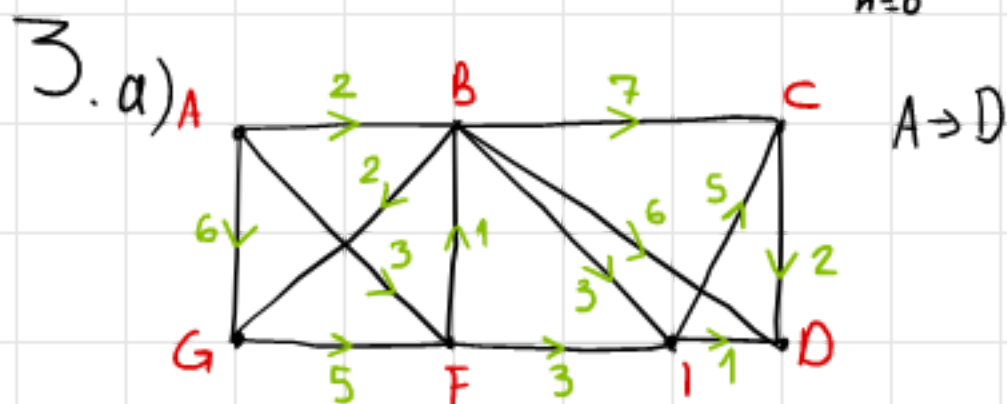
$$B - A = 3 \quad B = 3/4$$

$$A + 3B = 0 \quad A = -9/4$$

$$A(x) = -\frac{9}{4} \cdot \frac{1}{3(1+\frac{x}{3})} + \frac{3}{4(1-x)}$$

$$= -\frac{3}{4} \sum_{n=0}^{\infty} (-1)^n \cdot \left(\frac{x}{3}\right)^n + \frac{3}{4} \sum_{n=0}^{\infty} x^n$$

$$= \sum_{n=0}^{\infty} x^n \left(-\frac{3}{4} \cdot \left(-\frac{1}{3}\right)^n + \frac{3}{4} \right) \rightarrow 0 \text{ peti član}$$



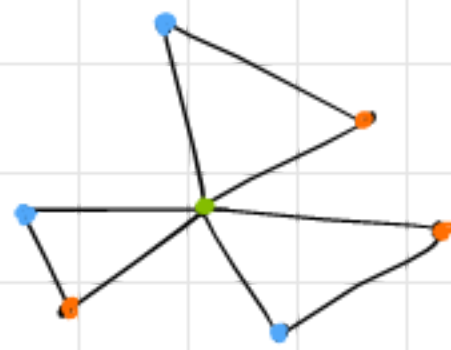
A → D

A	∞	∞	∞	∞	∞	∞
B	2	2	2	2	2	2
C	∞	9	9	9	9	9
D	∞	8	8	8	6	6
E	3	3	3	3	3	3
F	6	4	4	4	4	4
G	0	5	5	5	5	5

⇒ 6
A → B → E → D

3b) Da ABCDIFGA;
da ABCDIFG

4a.



4b) $4h+2$ čvorova $3h^2$ grane 3 komp.

$$3h^2 - 4h + 1 \quad h^2 + (2h-1)^2 > 0 \quad \forall h \in \mathbb{N} \quad \text{Imamo dovoljno grana}$$

$$\frac{4h \cdot (4h-1)}{2} = (2h(4h-1) - 3h^2) = 5h^2 - 2h > 0 \quad \text{Pravimo kompletan graf od } 4h$$

čvorova i proveravamo da li imamo previše grana: $5h-2$ tj $5h > 2$ što važi za svako $h \in \mathbb{N}$ (bez nule ako to gledate tako)

4c) m čvorova, $m \geq 3$, $d_G(v) \geq \frac{m-1}{2}$ za svaki čvor; Dokazati da je povezan

PPS: Postoje dve komponente G_1 i G_2 ; G_1 : 1 čvor + $\frac{m-1}{2}$ čvorova = $\frac{m+1}{2}$ (minimalno potrebno) Ako imamo dve komponente povezanosti $\Rightarrow 2 \cdot \frac{m+1}{2} = m+1 > m$ $\hookrightarrow$

$m^2 - m \geq 2(m-1) \cdot 2 \quad m(m-1) \geq 4(m-1) \quad m \geq 4$ što je $m > 3$ Ono je izuzetak ovaj proveriti jer $d_G(v) \geq 1$ što važi za povezan graf ako su 2 čvora stepena 1, a drugi 2