

Popuniti odmah!

IME I PREZIME: DELI MILETIĆ

BRJ INDEKSA: 57163

33

DATUM: _____ VRIJEME: OD _____ DO _____

MATEMATIKA 1: Trajanje 100 minuta. Zabranjen je razgovor sa drugim studentima. ZADATKE RIJEŠAVATE JEDNOSTRANO NA PAPIRE KOJE DOBIJETE OD NASTAVNIKA.

x00x
Broj ↓
bodova

1. Koju relaciju zadovoljava inverz matrice? Provjeriti tu relaciju za inverz matrice (ako postoji)

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

20

2. Pronaći sve kompleksne brojeve z takve da je $z^4 + |3i + 4| = \frac{5}{i^{31}}$.

~~0~~

3. Odrediti domenu i sve asimptote funkcije $f(x) = \ln\left(\frac{x}{1-x}\right)$.

~~0~~

4. Ispitati domenu, periodičnost, (ne)parnost i prvu derivaciju funkcije $g(x) = \sin(\cos(3x))$.

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5. Na temelju ispitivanja toka funkcije napraviti skicu grafa funkcije f iz zadatka 3.

~~0~~

$$\begin{aligned}
 1. \quad & \left[\begin{array}{ccc|ccc} 1 & 0 & 0 & 1 & 1 & 0 & 0 & 0 \\ 0 & 2 & 3 & 0 & 0 & 1 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 & 0 & 0 \\ 1 & 0 & 0 & 2 & 1 & 0 & 0 & 0 \end{array} \right] \xrightarrow{\cdot(-1)} \left[\begin{array}{ccc|ccc} 1 & 0 & 0 & 1 & 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 & 0 & 0 \\ 0 & 2 & 3 & 0 & 0 & 1 & 0 & 0 \\ 1 & 0 & 0 & 2 & 0 & 0 & 0 & 1 \end{array} \right] \cdot (-1) = \left[\begin{array}{ccc|ccc} 1 & 0 & 0 & 1 & 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 & 0 & 0 \\ 0 & 2 & 3 & 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 & -1 & 0 & 0 & 1 \end{array} \right] \cdot (-2) \\
 & = \left[\begin{array}{ccc|ccc} 1 & 0 & 0 & 1 & 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 3 & 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 & -1 & 0 & 0 & 1 \end{array} \right] \cdot \frac{1}{3} = \left[\begin{array}{ccc|ccc} 1 & 0 & 0 & 1 & 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 & \frac{1}{3} & -\frac{2}{3} & 0 \\ 0 & 0 & 0 & 1 & -1 & 0 & 0 & 1 \end{array} \right] \cdot (-1) = \left[\begin{array}{ccc|ccc} 1 & 0 & 0 & 0 & 2 & 0 & 0 & -1 \\ 0 & 1 & 0 & 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 1 & 0 & 0 & \frac{1}{3} & -\frac{2}{3} & 0 \\ 0 & 0 & 0 & 1 & -1 & 0 & 0 & 1 \end{array} \right]
 \end{aligned}$$

$$A \cdot A^{-1} = \begin{bmatrix} 1 & 0 & 0 & 1 \\ 0 & 2 & 3 & 0 \\ 0 & 1 & 0 & 0 \\ 1 & 0 & 0 & 2 \end{bmatrix} \times \begin{bmatrix} 2 & 0 & 0 & -1 \\ 0 & 0 & 1 & 0 \\ 0 & \frac{1}{3} & -\frac{2}{3} & 0 \\ -1 & 0 & 0 & 1 \end{bmatrix} = \begin{bmatrix} 2+0+0+(-1) & 0+0+0+0 & 0+0+0+0 & 0+0+0+(-1) \\ 0+0+0+0 & 0+0+0+0 & 0+0+0+0 & 0+0+0+0 \\ 0+0+0+0 & 0+0+0+0 & 0+0+0+0 & 0+0+0+0 \\ 2+0+0+(-2) & 0+0+0+0 & 0+0+0+0 & 0+0+0+0 \end{bmatrix}$$

$$= \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}$$

matrica je jedinična i ima inverz

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DEJII MILEFIĆ

IME I PREZIME:

$z^3 = -1$

BROJ INDEKSA:

$$2. z^4 + |3i+4| = \frac{5}{i \cdot 31}$$

$$z^4 + |3i+4| = -5 \quad \text{X}$$

$$z^4 = -5 - |3i+4|$$

$$z^4 = -5 - \sqrt{3^2+4^2}$$

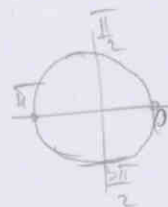
$$z^4 = -5-5$$

$$z^4 = -10$$

$$z = \sqrt[4]{-10}$$

$$\frac{31:4 = 7,75}{\frac{-28}{30}} \quad \text{X}$$

$$z = r(\cos \varphi + i \sin \varphi)$$



$$r = \sqrt{(-10)^2} = 10$$

$$\text{argang } \varphi = \frac{\text{Im}}{\text{Re}} = \frac{-10}{-10} = 1 \quad \text{X}$$

$$\frac{0}{-10} = 0$$

$$31:4 = 7 + \text{ostatak } 3$$

$$\Rightarrow i^{31} = i^3 = -i$$

VIDI DOMINI
SOZIĆ

$$\text{za } k=0 \quad z = \sqrt[4]{-10} = 10 \left(\cos \frac{\pi}{4} + i \sin \frac{\pi}{4} \right)$$

$$\text{za } k=1 \quad z = \sqrt[4]{-10} = 10 \left(\cos \frac{\pi+2\pi}{4} + i \sin \frac{\pi+2\pi}{4} \right)$$

$$= 10 \left(\cos \frac{3\pi}{4} + i \sin \frac{3\pi}{4} \right)$$

$$\text{za } k=2 \quad z = \sqrt[4]{-10} = 10 \left(\cos \frac{\pi+4\pi}{4} + i \sin \frac{\pi+4\pi}{4} \right)$$

$$= 10 \left(\cos \frac{5\pi}{4} + i \sin \frac{5\pi}{4} \right)$$

$$\text{za } k=3 \quad z = \sqrt[4]{-10} = 10 \left(\cos \frac{\pi+6\pi}{4} + i \sin \frac{\pi+6\pi}{4} \right)$$

$$= 10 \left(\cos \frac{7\pi}{4} + i \sin \frac{7\pi}{4} \right)$$

$$3. f(x) = \ln\left(\frac{x}{1-x}\right) \quad \times \quad \emptyset \quad \text{VIDI DAMLOVIĆ}$$

$$D =]0, 1[\quad \times$$

Vertikalne asimptote

$$f(x) = \lim_{x \rightarrow 0} \ln\left(\frac{x}{1-x}\right) = \lim_{x \rightarrow 0} \ln\left(\frac{0}{1-0}\right) = \ln(0)$$

n.d.a

Horizontalne asimptote

$$f(x) = \lim_{x \rightarrow \infty} \ln\left(\frac{x}{1-x}\right) = L'H = \lim_{x \rightarrow \infty} \frac{1}{x} \cdot \frac{1}{-1} = \frac{1}{x} = L'H = \frac{0}{1} = 0$$

ima horizontalnu
asimptotu

$$4. \quad -g(x) = \sin(\cos(3x))$$

$$-g'(x) = \cos(\cos(3x)) \cdot (-\sin(3x)) \cdot 3$$

$$= -3 \sin(3x) \cos(\cos(3x)) \quad \checkmark$$

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funkcija je periodična, njen period je π ~~π~~ **VIDI SLIČNO ŠKIČ**

$$-D = \langle 0 + 2k\pi, 2\pi + 2k\pi \rangle \quad D(g) = \mathbb{R}$$

$$-g(x) = -g(x) = -\sin(\cos(3x))$$

$$g(-x) = \sin(\cos(-3x))$$

$$\Rightarrow \sin(\cos(3x)) \text{ funkcija je parna } \checkmark$$

5. $f(x) = \ln\left(\frac{x}{1-x}\right)$

- nul tačke

$x = 0$

$\ln\left(\frac{x}{1-x}\right) = 0$

$\frac{x}{1-x} = e$

$x = e \cdot (1-x)$

$x = e - ex$

- ekstremi:

$$f'(x) = \frac{\frac{1}{x}}{1-x} \cdot \frac{1(1-x) - x(-1)}{(1-x)^2} = \frac{1-x}{x} \cdot \frac{1-x+x}{(1-x)^2}$$

$$= \frac{1-x}{x} \cdot \frac{1}{(1-x)^2} = \frac{1-x}{x(1-x)^2}$$

$\rightarrow x = 0$

$1-x = 0$

$x = 1$

$f(1) = \ln\left(\frac{1}{1-1}\right) = \ln\left(\frac{1}{0}\right)$

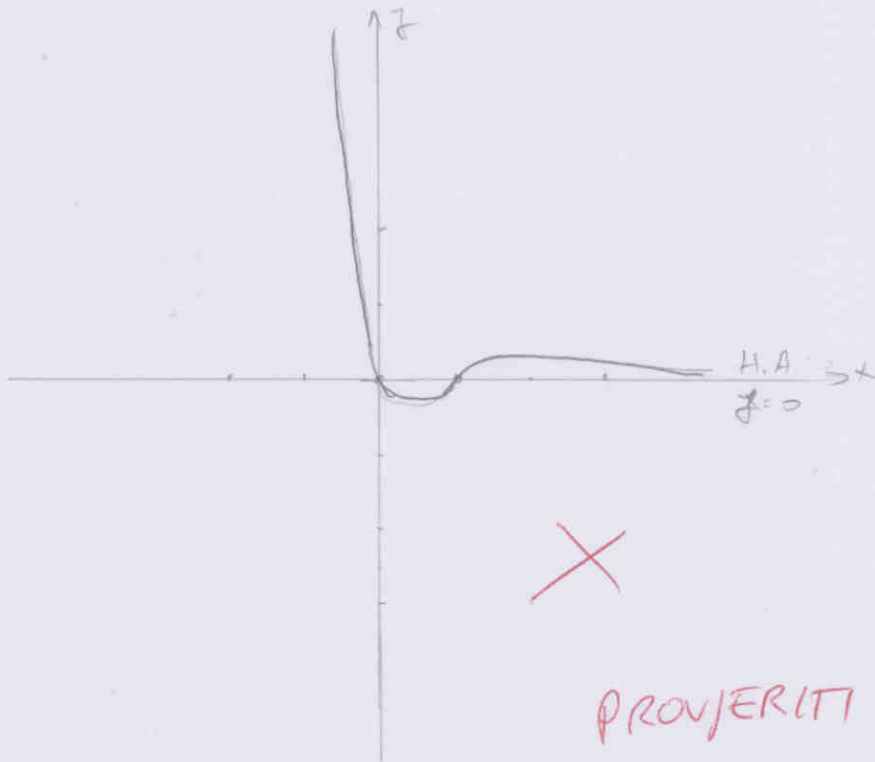
- intervali:

| | | | |
|-----------|------------|------------|------------|
| $-\infty$ | 0 | 1 | $+\infty$ |
| $f'(x)$ | $-$ | $+$ | $-$ |
| $f(x)$ | \searrow | \nearrow | \searrow |

IME I PREZIME: ĐEVIĆ MILETIĆ

BROJ INDEKSA:

5.



PROVJERITI ZA $x=0$
ZA $x=-1$
ZA $x=1$
ZA $x=2$

VJEŽBATI, VJEŽBATI, VJEŽBATI

Popuniti odmah!

IME I PREZIME: **LUKA KURILIĆ**

BROJ INDEKSA: **58076**

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DATUM: _____ VRIJEME: OD **13 30** DO _____

MATEMATIKA 1: Trajanje 100 minuta. Zabranjen je razgovor sa drugim studentima. ZADATKE RIJEŠAVATE JEDNOSTRANO NA PAPIRE KOJE DOBIJETE OD NASTAVNIKA.

xoox
Broj ↓
bodova

1. Koju relaciju zadovoljava inverz matrice? Provjeriti tu relaciju za inverz matrice (ako postoji)

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~~0~~

4. Ispitati domenu, periodičnost, (ne)parnost i prvu derivaciju funkcije $g(x) = \sin(\cos(3x))$.

~~0~~

5. Na temelju ispitivanja toka funkcije napraviti skicu grafa funkcije f iz zadatka 3.

④ $g(x) = \sin(\cos(3x))$
 $g(x)' = \sin(-\sin(3x) \cdot 3)$
 $g(x)' = \sin(-\sin 3x)$ ✗
 $g(x)' = \cos(-\sin 3x) \cdot \cos \cdot 3$
 $g(x)' = 3 \cos^2(-\sin 3x)$

VIDI DOMIN!

① $A = \begin{bmatrix} 1 & 0 & 0 & 1 & 1 & 0 & 0 & 0 \\ 0 & 2 & 3 & 0 & 0 & 1 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 & 0 & 1 & 0 \\ 1 & 0 & 0 & 2 & 0 & 0 & 0 & 1 \end{bmatrix} \sim \begin{bmatrix} 1 & 0 & 0 & 2 & 1 & 0 & 0 & 0 \\ 0 & 2 & 3 & 0 & 0 & 1 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 & 0 & 1 & 0 \\ 1 & 0 & 0 & 1 & 1 & 0 & 0 & 0 \end{bmatrix} \sim \begin{bmatrix} 1 & 0 & 0 & 2 & 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 & 0 & 1 & 0 \\ 0 & 2 & 3 & 0 & 0 & 1 & 0 & 0 \\ 1 & 0 & 0 & 1 & 1 & 0 & 0 & 0 \end{bmatrix} \sim \begin{bmatrix} 1 & 0 & 0 & 2 & 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 3 & 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & -1 & 1 & 0 & 0 & 0 \end{bmatrix} \sim \begin{bmatrix} 1 & 0 & 0 & 2 & 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 3 & 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & -1 & 1 & 0 & 0 & 0 \end{bmatrix} \sim \begin{bmatrix} 1 & 0 & 0 & 0 & 2 & 0 & 0 & -1 \\ 0 & 1 & 0 & 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 3 & 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & -1 & 1 & 0 & 0 & 0 \end{bmatrix} \sim \begin{bmatrix} 1 & 0 & 0 & 0 & 2 & 0 & 0 & -1 \\ 0 & 1 & 0 & 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 1 & 0 & 0 & \frac{1}{3} & 0 & 0 \\ 0 & 0 & 0 & -1 & 1 & 0 & 0 & 0 \end{bmatrix} \sim \begin{bmatrix} 1 & 0 & 0 & 0 & 2 & 0 & 0 & -1 \\ 0 & 1 & 0 & 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 1 & 0 & 0 & \frac{1}{3} & 0 & 0 \\ 0 & 0 & 0 & -1 & 1 & 0 & 0 & 0 \end{bmatrix}$

~~$A \times A^{-1} = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 2 & 3 & 0 \\ 0 & 1 & 0 & 0 \\ 1 & 0 & 0 & 2 \end{bmatrix} \times \begin{bmatrix} 2 & 0 & 0 & -1 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix} = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}$~~

$A \times A^{-1} = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 2 & 3 & 0 \\ 0 & 1 & 0 & 0 \\ 1 & 0 & 0 & 2 \end{bmatrix} \times \begin{bmatrix} 2 & 0 & 0 & -1 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix} = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}$ ✓ 20

③ $f(x) = \ln\left(\frac{x}{1-x}\right)$
 $1-x \neq 0$
 $-x = -1$
 $x = 1$

$Df \langle -\infty, 1 \rangle \cup \langle 1, +\infty \rangle$
 zbog $\mathcal{D}(\ln) = \langle 0, +\infty \rangle$ ✗
 TREBA BITI
 $\frac{x}{1-x} > 0$, KADA?
VIDI DANILOVIĆ

Popuniti odmah!

IME I PREZIME: NIKOLA KVEŽEVIĆ

BROJ INDEKSA: 17-1-0002-2010

DATUM: 29.04.2011 VRIJEME: OD 13.30 DO

MATEMATIKA 1: Trajanje 100 minuta. Zabranjen je razgovor sa drugim studentima. ZADATKE RIJEŠAVATE JEDNOSTRANO NA PAPIRE KOJE DOBIJETE OD NASTAVNIKA.

xoox
Broj ↓
bodova

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~~0~~

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5. Na temelju ispitivanja toka funkcije napraviti skicu grafa funkcije f iz zadatka 3.

1.

$$\left[\begin{array}{cccc|cccc} 1 & 0 & 0 & 1 & 1 & 0 & 0 & 0 \\ 0 & 2 & 3 & 0 & 0 & 1 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 & 0 & 1 & 0 \\ 1 & 0 & 0 & 2 & 0 & 0 & 0 & 1 \end{array} \right] \xrightarrow{(-1)} \left[\begin{array}{cccc|cccc} 1 & 0 & 0 & 1 & 1 & 0 & 0 & 0 \\ 0 & 2 & 3 & 0 & 0 & 1 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 & -1 & 0 & 0 & 1 \end{array} \right] \xrightarrow{(-1)}$$

$$\sim \left[\begin{array}{cccc|cccc} 1 & 0 & 0 & 1 & 1 & 0 & 0 & 0 \\ 0 & 1 & 3 & 0 & 0 & 1 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 & -1 & 0 & 0 & 1 \end{array} \right] \xrightarrow{(-1)} \left[\begin{array}{cccc|cccc} 1 & 0 & 0 & 1 & 1 & 0 & 0 & 0 \\ 0 & 1 & 3 & 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 3 & 0 & 0 & -1 & 2 & 0 \\ 0 & 0 & 0 & 1 & -1 & 0 & 0 & 1 \end{array} \right] \cdot \frac{-1}{3} \sim$$

$$\sim \left[\begin{array}{cccc|cccc} 1 & 0 & 0 & 1 & 1 & 0 & 0 & 0 \\ 0 & 1 & 3 & 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 & \frac{1}{3} & -\frac{2}{3} & 0 \\ 0 & 0 & 0 & 1 & -1 & 0 & 0 & 1 \end{array} \right] \xrightarrow{(-1)} \left[\begin{array}{cccc|cccc} 1 & 0 & 0 & 0 & 2 & 0 & 0 & -1 \\ 0 & 1 & 0 & 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 1 & 0 & 0 & \frac{1}{3} & -\frac{2}{3} & 0 \\ 0 & 0 & 0 & 1 & -1 & 0 & 0 & 1 \end{array} \right]$$

$$A^{-1} = \begin{bmatrix} 2 & 0 & 0 & -1 \\ 0 & 0 & 1 & 0 \\ 0 & \frac{1}{3} & -\frac{2}{3} & 0 \\ -1 & 0 & 0 & 1 \end{bmatrix}$$



PROJEKTA

$$A \cdot A^{-1} = I$$

RELACIJA

$$\begin{bmatrix} 1 & 0 & 0 & 1 \\ 0 & 2 & 3 & 0 \\ 0 & 1 & 0 & 0 \\ 1 & 0 & 0 & 2 \end{bmatrix} \cdot \begin{bmatrix} 2 & 0 & 0 & -1 \\ 0 & 0 & 1 & 0 \\ 0 & \frac{1}{3} & \frac{2}{3} & 0 \\ -1 & 0 & 0 & 1 \end{bmatrix} = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}$$



$$\begin{aligned} a_{11} &= 2 - 1 = 1 & a_{12} &= 0 & a_{13} &= 0 & a_{14} &= -1 + 1 = 0 \\ a_{21} &= 0 & a_{22} &= 1 & a_{23} &= 2 - 2 = 0 & a_{24} &= 0 \\ a_{31} &= 0 & a_{32} &= 0 & a_{33} &= 1 & a_{34} &= 0 \\ a_{41} &= 2 - 2 = 0 & a_{42} &= 0 & a_{43} &= 0 & a_{44} &= -1 + 2 = 1 \end{aligned}$$

INVERZ MATRICE A JE MATRICA A⁻¹

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2. $z^4 = T$

$$T + |3i+4| = \frac{5}{i^{31}}$$

$$\begin{aligned} |3i+4| &= \sqrt{4^2+3^2} \\ &= \sqrt{16+9} \\ &= 5 \end{aligned}$$

$$T + 3i + 4 = \frac{5}{i^{31}}$$

$$T = -3i - 4 + \frac{5}{i^{31}}$$

$$T = -3i - 4 + \frac{5}{-i}$$

$$T = -4 + \left(\frac{5}{-i}\right) + 3i$$

$$T = -4 + \frac{5i}{i^2} + 3i$$

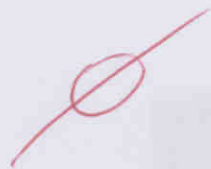
$$T = -4 + \frac{5i}{-1} + 3i$$

$$T = -4 + 5i + 3i$$

$$T = 2i - 4$$

$$z^4 = 2i - 4$$

$$\begin{aligned} \frac{5}{-i} &= \frac{5}{-i} \cdot 1 \\ \frac{5}{-i} &= \frac{5}{-i} \cdot 1 = \frac{-5i}{-i^2} \\ \frac{5}{-i} &= \frac{5}{-i} \cdot \frac{-i}{-i} = \frac{-5i}{i^2} = \frac{-5i}{-1} = 5i \end{aligned}$$



VIDI DOMINI JOZIC

A DRUGI DIO GRADIVA?

Popuniti odmah!

IME I PREZIME: EDI DOMINI.

BROJ INDEKSA: 0069044382

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DATUM: 28.04.2011, VRIJEME: OD 12:20 DO

MATEMATIKA 1: Trajanje 100 minuta. Zabranjen je razgovor sa drugim studentima. ZADATKE RIJEŠAVATE JEDNOSTRANO NA PAPIRE KOJE DOBIJETE OD NASTAVNIKA.

x00x
Broj ↓
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$$A = \begin{bmatrix} 1 & 0 & 0 & 1 \\ 0 & 2 & 3 & 0 \\ 0 & 1 & 0 & 0 \\ 1 & 0 & 0 & 2 \end{bmatrix}$$

~~Ø~~

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~~Ø~~

3. Odrediti domenu i sve asimptote funkcije $f(x) = \ln\left(\frac{x}{1-x}\right)$.

~~Ø~~

4. Ispitati domenu, periodičnost, (ne)parnost i prvu derivaciju funkcije $g(x) = \sin(\cos(3x))$.

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5. Na temelju ispitivanja toka funkcije napraviti skicu grafa funkcije f iz zadatka 3.

1. Relacija koja zadovoljava inverz matrice je: $A \cdot A^{-1} = I$ ✓
Ako matrica ima $\det A \neq 0$ onda ima inverz.

$$\det A = \begin{vmatrix} 1 & 0 & 0 & 1 \\ 0 & 2 & 3 & 0 \\ 0 & 1 & 0 & 0 \\ 1 & 0 & 0 & 2 \end{vmatrix} = 1 \cdot \begin{vmatrix} 2 & 3 & 0 \\ 1 & 0 & 0 \\ 0 & 0 & 2 \end{vmatrix} - 1 \cdot \begin{vmatrix} 0 & 0 & 1 \\ 2 & 3 & 0 \\ 1 & 0 & 0 \end{vmatrix} = -3$$

$$= 1 \cdot \begin{vmatrix} 2 & 3 & 0 \\ 1 & 0 & 0 \\ 0 & 0 & 2 \end{vmatrix} = -6 - 3 = -9$$

$\det A = -9 \neq 0$
Znači ima inverz! ✓

INVERZ SE TRAŽI NA PROŠIRENOJ MATRICI
VIDI SEMINAR #6, PRIMJER (1) i (2).
VIDI KURILIĆ

$$A^{-1} = \begin{bmatrix} 1 & 0 & 0 & 2 \\ 0 & 2 & 3 & 0 \\ 0 & 1 & 0 & 0 \\ 1 & 0 & 0 & 1 \end{bmatrix} \begin{matrix} \downarrow \\ \uparrow \end{matrix} = \begin{bmatrix} 1 & 0 & 0 & 2 \\ 0 & 1 & 0 & 0 \\ 0 & 2 & 3 & 0 \\ 1 & 0 & 0 & 1 \end{bmatrix} \begin{matrix} \downarrow \\ \uparrow \end{matrix} \begin{matrix} /:3 \\ \downarrow \end{matrix} = \begin{bmatrix} 1 & 0 & 0 & 2 \\ 0 & 1 & 0 & 0 \\ 0 & \frac{2}{3} & 1 & 0 \\ 1 & 0 & 0 & 1 \end{bmatrix} \begin{matrix} / \cdot (-1) \\ \downarrow \end{matrix}$$

$$= \begin{bmatrix} 1 & 0 & 0 & 2 \\ 0 & 1 & 0 & 0 \\ 0 & \frac{2}{3} & 1 & 0 \\ 0 & 0 & 0 & -1 \end{bmatrix} \begin{matrix} / \cdot (-1) \\ \downarrow \end{matrix} = \begin{bmatrix} 1 & 0 & 0 & 2 \\ 0 & 1 & 0 & 0 \\ 0 & \frac{2}{3} & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix} \begin{matrix} \uparrow \\ / \cdot (-2) \end{matrix} = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & \frac{2}{3} & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}$$

~~Ø~~

IME I PREZIME: EDI DOMINI

BROJ INDEKSA: 00 69044382

② $z^4 + |3i+4| = \frac{5}{i^{31}}$

$|3i+4| = \sqrt{4^2+3^2} = \sqrt{25} = 5$
 $i^{31} = (i^4)^7 \cdot i^3 = -i$

$z^4 + |3i+4| = \frac{5}{-i}$

$|z| = \sqrt{\left(-\frac{1}{8}\right)^2 + (-4)^2} = \sqrt{\frac{1}{64} + 16}$
 $= \sqrt{\frac{1+1024}{64}} = \sqrt{\frac{1025}{64}}$

$z^4 - \frac{5}{-i} - |3i+4| = 0$

$|z| = \frac{32}{8} = 4$

$z^4 = 5 \cdot (-i)^{-1} - |3i+4| = 0$

$z^4 = -5i^{-1} - 3i - 4$ *NE MOŽE SE ZBROJITI*

or $\operatorname{tg} \varphi = \frac{-\frac{1}{8}}{-4} = \frac{32}{1} = 32$

$z^4 = -8i^{-1} - 4$ *GDJE JE OVO?*

$\varphi = \operatorname{arc} \operatorname{tg} 32$

$z^4 = -\frac{1}{8i} - 4$ *NESTALO*

$\varphi = 88.21$

$z = \sqrt[4]{-4} = 1.41$ *OVO NIJE OSNOVNI OBLUK KOMPLEKSNOG BROJA*

RACIONALIZACIJA
 $\frac{5 \cdot i}{-i \cdot i} = \frac{5i}{1}$

$k=0$
 $z_1 = 1.41 \left(\cos \frac{88.21 + 2 \cdot 0 \cdot \pi}{4} + i \sin \frac{88.21 + 2 \cdot 0 \cdot \pi}{4} \right)$

$= 1.41 \cdot (\cos 22.0525 + i \sin 22.0525)$

$z_1 = 0.466 + i 0.266$

$k=1$
 $z_2 = 1.41 \cdot \left(\cos \frac{88.21 + 2 \cdot 1 \cdot \pi}{4} + i \sin \frac{88.21 + 2 \cdot 1 \cdot \pi}{4} \right)$

$= 1.41 \cdot (\cos 112.0525 + i \sin 112.0525)$

$z_2 = -0.53 + i 0.657$

② $k=2$

$$z_3 = 1.41 \cdot \left(\cos \frac{88.21 + 2 \cdot 2\pi}{4} + i \sin \frac{88.21 + 2 \cdot 2\pi}{4} \right)$$

$$= 1.41 \cdot (\cos 202.0525 + i \sin 202.0525)$$

$$z_3 = -1.306 - i0.266$$

$k=3$

$$z_4 = 1.41 \cdot \left(\cos \frac{88.21 + 2 \cdot 3 \cdot \pi}{4} + i \sin \frac{88.21 + 2 \cdot 3 \cdot \pi}{4} \right)$$

$$= 1.41 \cdot (\cos 292.0525 + i \sin 292.0525)$$

$$z_4 = 0.53 - i1.31$$

NJE POTREBNO TRAZITI f'(x)

③ $f(x) = \ln \left(\frac{x}{x-1} \right)$

$$f'(x) = \frac{1}{\frac{x}{x-1}} \cdot \frac{1 \cdot (x-1) - x \cdot 1}{(x-1)^2}$$

$D(f(x)) = \mathbb{R}^+ \setminus \{1\}$ ~~X~~

$$= \frac{x-1}{x} \cdot \frac{x-1-x}{(x-1)^2}$$

H.A.

$$= \frac{-1}{x \cdot (x-1)} = \frac{-1}{x^2 - x}$$

$$\lim_{x \rightarrow +\infty} \ln \left(\frac{x}{x-1} \right) = +\infty$$

$$\lim_{x \rightarrow -\infty} \ln \left(\frac{x}{x-1} \right) = -\infty$$

$$\frac{x=1}{\text{X}}$$

$$\begin{matrix} x-1 \rightarrow 0 \\ x=1 \end{matrix}$$

DOMENA:

V.A

$$\lim_{x \rightarrow 1} \ln \left(\frac{x}{x-1} \right) = \lim_{x \rightarrow 1} \ln \left(\frac{1}{0} \right) = \infty \quad ?$$

KADA JE ?

$$\frac{x}{x-1} > 0$$

4) $g(x) = \sin(\cos(3x))$

1) $D(g(x)) = \mathbb{R}$ ✓

2) Funkcija je periodična jer i sin i cos su periodične funkcije! Imaju period trajanja 2π !

KOJI JE PERIOD OD g ?

ZA ODGOVOR VIDI

VRLO SLIČNO KOD

VIDI ŠIKIĆ

3) $g(-x) = \sin(\cos(3 \cdot (-x)))$

$= \sin(\cos(3x)) \Rightarrow$ funkcija je parna! ✓

4) $g'(x) = (\sin(\cos(3x)))'$

$= \cos(\cos(3x)) \cdot (\cos(3x))' \cdot (3x)'$ ✓

$= \cos^2(3x) \cdot (-\sin(3x)) \cdot 3$

$= -3 \cos^2(3x) \cdot \sin(3x)$

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$\cos^2(3x) = \cos(3x) \cdot \cos(3x)$

~~$\cos(\cos(3x))$~~

PROVJERI DA SU GORNJI I DONJI
IZRAZI RAZLIČITI ZA $x = \frac{\pi}{12}$

USPJEH KAO PROŠLI PUTA...

TREBA DOSTA VJEŽBATI, NAJBOLJE TESTIRATI SVOJE ZNANJE
NA DOSTUPNIM PISMENIM ISPITIMA...