MATEMATIKA 1: Ispit se održava sukladno objavljenim pravilima. Na snazi je Pravilnik o stegovnoj odgovornosti studenata. **PIŠITE DVOSTRANO!** Obavezno popuniti sva polja ispod↓↓ C7

IME I PREZIME: TONI ŠTOŠIĆ **BROJ INDEKSA:**

ZAOKRUŽITI AKO ŽELITE: ustmeni kod prof. Uglešića

POPUNJAVA NASTAVNIK
Broj ↓ bodova

1. Među kompleksnim brojevima odrediti rješenja jednadžbe $z^3 = -(-i)^{843}$. *Prikazati rješenja u kompleksnoj ravnini!* 10+5
2. Riješi sustav Gaussovom metodom i obavezno provjeri rješenje: 10+5

$$\begin{aligned} 5x + 4z + 2t &= 3 \\ x - y + 2z + t &= 1 \\ 4x + y + 2z &= 1 \\ x + y + z + t &= 0 \end{aligned}$$

3. Odrediti kada je $\frac{x+1}{\sqrt{x^2-x}} - 1 > 0$. Obavezno uvrštavanjem provjeriti rješenje jednadžbi koje se javljaju tokom rješavanja nejednadžbe. 13+2
4. Za funkciju: $f(x) = \sqrt{x^2+4x+5}$ treba:
   (a) pronaći drugu derivaciju 10
   (b) na temelju ispitivanja toka funkcije skicirati graf 20(graf)
5. Odrediti i provjeriti rješenje $\lim_{x\to+\infty} \left(\frac{n}{n-4}\right)^n =$ 8+2
6. Riješiti jednadžbu $\log_{10} x = \arctan x$ grafičkom metodom. *Provjeriti uvrštavanjem!* 10+5

Ukupno: 10

1. $z^3 = -(-i)^{843}$

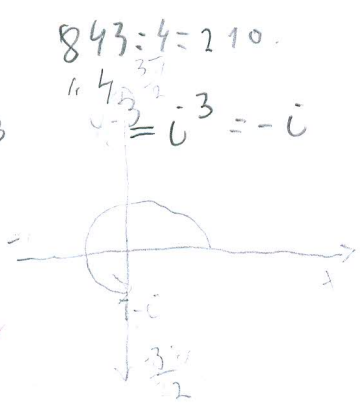
$z^3 = i^{843}$

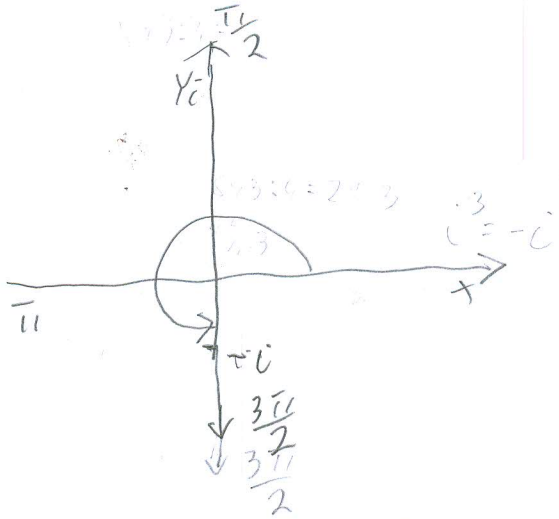
$z^3 = -i$

$z = \sqrt[3]{-i}$ ✓

$843 : 4 = 210$ (3)

$i^3 = -i$





za $k = 0, 1, 2$

$\varphi = \frac{3\pi}{2}$

a) $z_1 = \sqrt[3]{1}\left(\cos\frac{\varphi + k\cdot 2\pi}{n} + i\sin\frac{\varphi + k\cdot 2\pi}{n}\right)$

$z_1 = \sqrt[3]{1}\left(\cos\frac{\frac{3\pi}{2} + 0\cdot 2\pi}{3} + i\sin\frac{\frac{3\pi}{2} + 0\cdot 2\pi}{3}\right)$

$|w| = \sqrt{x^2+y^2}$

$|w| = \sqrt{0^2+1^2}$

$|w| = \sqrt{1} = 1$

$z_1 = 1(\cos 1.57 + i \sin 1.57)$

$z_1 = 0.007 + i\,0.999$

$z_2 = ?$ $z_3 = ?$

2.

$$\left[\begin{array}{cccc|c} 5 & 0 & 4 & 2 & 3 \\ 1 & -1 & 2 & 1 & 1 \\ 4 & 1 & 2 & 0 & 1 \\ 1 & 1 & 1 & 1 & 0 \end{array}\right] \sim \left[\begin{array}{cccc|c} 1 & -1 & 2 & 1 & 1 \\ 5 & 0 & 4 & 2 & 3 \\ 4 & 1 & 2 & 0 & 1 \\ 1 & 1 & 1 & 1 & 0 \end{array}\right] \sim \left[\begin{array}{cccc|c} 1 & -1 & 2 & 1 & 1 \\ 0 & 5 & -6 & -3 & -2 \\ 0 & 5 & -6 & -4 & -3 \\ 0 & 0 & -1 & 0 & -1 \end{array}\right] \sim$$

$1R \leftrightarrow 2R$

$1R \cdot (-5) + 2R$
$1R \cdot (-4) + 3R$
$1R \cdot (-1) + 4R$

$2R : 5$

$$\left[\begin{array}{cccc|c} 1 & -1 & 2 & 1 & 1 \\ 0 & 1 & -\frac{6}{5} & \frac{3}{5} & -\frac{2}{5} \\ 0 & 5 & -6 & -4 & -3 \\ 0 & 0 & -1 & 0 & -1 \end{array}\right] \sim \left[\begin{array}{cccc|c} 1 & -1 & 2 & 1 & 1 \\ 0 & 1 & -\frac{6}{5} & \frac{3}{5} & -\frac{2}{5} \\ 0 & 0 & 0 & -1 & -1 \\ 0 & 0 & -1 & 0 & -1 \end{array}\right] \sim \left[\begin{array}{cccc|c} 1 & -1 & 2 & 1 & 1 \\ 0 & 1 & -\frac{6}{5} & -\frac{3}{5} & -\frac{2}{5} \\ 0 & 0 & -1 & 0 & -1 \\ 0 & 0 & 0 & -1 & -1 \end{array}\right] \sim$$

$2R \cdot (-5) + 3R$

$3 \leftrightarrow 4$

$3R : (-1)$
$4R : (-1)$

$$\left[\begin{array}{cccc|c} 1 & -1 & 2 & 1 & 1 \\ 0 & 1 & -\frac{6}{5} & -\frac{3}{5} & -\frac{2}{5} \\ 0 & 0 & 1 & 0 & 1 \\ 0 & 0 & 0 & 1 & 1 \end{array}\right] \sim \left[\begin{array}{cccc|c} 1 & -1 & 2 & 0 & 0 \\ 0 & 1 & -\frac{6}{5} & 0 & \frac{1}{5} \\ 0 & 0 & 1 & 0 & 1 \\ 0 & 0 & 0 & 1 & 1 \end{array}\right] \sim \left[\begin{array}{cccc|c} 1 & -1 & 0 & 0 & -2 \\ 0 & 1 & 0 & 0 & \frac{7}{5} \\ 0 & 0 & 1 & 0 & 1 \\ 0 & 0 & 0 & 1 & 1 \end{array}\right] \sim \left[\begin{array}{cccc|c} 1 & 0 & 0 & 0 & -\frac{3}{5} \\ 0 & 1 & 0 & 0 & \frac{7}{5} \\ 0 & 0 & 1 & 0 & 1 \\ 0 & 0 & 0 & 1 & 1 \end{array}\right]$$

$4R \cdot \left(\frac{3}{5}\right) + 2R$
$4R \cdot (-1) + 1R$

$3R \cdot \frac{6}{5} + 2R$
$3R \cdot (-2) + 1R$

$2R \cdot 1 + 1R$

$x = -\frac{3}{5}$

$y = \frac{7}{5}$

$z = 1$

$t = 1$

Provjera:

a) $5 \cdot \left(-\frac{3}{5}\right) + 0 \cdot \frac{7}{5} + 4 \cdot 1 + 2 \cdot 1 = 3$

$-\frac{15}{5} + 0 + 4 + 2 = 3$

$3 = 3$

b) $1 \cdot \left(-\frac{3}{5}\right) - 1 \cdot \frac{7}{5} + 2 \cdot 1 + 1 \cdot 1 = 1$

$-\frac{3}{5} - \frac{7}{5} + 2 + 1 = 1$

$-\frac{10}{5} + 2 + 1 = 1$

$1 = 1$

c) $4 \cdot \left(-\frac{3}{5}\right) + 1 \cdot \frac{7}{5} + 2 \cdot 1 + 0 \cdot 1 = 1$

$-\frac{12}{5} + \frac{7}{5} + 2 + 0 = 1$

$-\frac{5}{5} + 2 + 0 = 1$

$1 = 1$

d) $1 \cdot \left(-\frac{3}{5}\right) + 1 \cdot \frac{7}{5} + 1 \cdot 1 + 1 \cdot 1 = 0$

$-\frac{3}{5} + \frac{7}{5} + 1 + 1 = 0$

$\frac{-3 + 7 + 5 + 5}{5} = 0$?

$0 = 0$

TONI STOŠIĆ

4. NAJŠIRA DOMENA:

$x^2+4x+5 \geq 0$

$a=1,\ U$

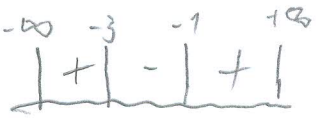
$x=\frac{-b\pm\sqrt{b^2-4ac}}{2a}$

$x=\frac{-4\pm\sqrt{4^2-4\cdot1\cdot5}}{2}$

$x_1=\frac{-4+\sqrt{-4}}{2}$

$x_1=\frac{-4+2}{2}=-1$

$x_2=\frac{-4-2}{2}=-3$



$D(f)=\langle-\infty,-3]\cup[-1,+\infty\rangle$

ASIMTOTI:

V.A NEMA jer točke nisu u domeni

H.A.

$\lim_{x\to+\infty}\sqrt{x^2+4x+2}=\lim_{x\to+\infty}\frac{x^2}{+2}+\frac{x}{4x^2}+\frac{2}{x^2}=1$

1 = D.H. 1

$\lim_{x\to-\infty}\sqrt{x^2+4x+2}\ \left[\begin{matrix}x\mapsto-x\\-\infty\to+\infty\end{matrix}\right]=$

$\lim_{x\to+\infty}\sqrt{x^2-4x+12.}=\lim_{x\to+\infty}\frac{x^2}{+2}-\frac{4x}{1}+\frac{2}{1}=1$

L.H.A

K.A NEMA jer ima H.A

3. Derivacija

=> PRE SLOŽENA

PARNOST:

$f(x)=f(-x)$

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

NIJE PARNA

NIJE PERIODIČNA

GRAF? 0

4. $f(x) = \sqrt{x^2+4x+5}$

$f'(x) = \frac{1}{2\sqrt{x^2+4x+5}} (x^2+4x+5)'$

$f'(x) = \frac{1}{2\sqrt{x^2+4x+5}} (2x+4)$

$f'(x) = \frac{2x+4}{2\sqrt{x^2+4x+5}}$ //

$f''(x) = \frac{(2x+4)' \cdot (2\sqrt{x^2+4x+5}) - (2x+4) \cdot (2\sqrt{x^2+4x+5})' \cdot (x^2+4x+5)'}{(2\sqrt{x^2+4x+5})^2}$

$f''(x) = \frac{4\sqrt{x^2+4x+5} - (2x+4) \cdot (2 \cdot \frac{1}{2}(x^2+4x+5)^{-\frac{1}{2}} \cdot (2x+4))}{(2\sqrt{x^2+4x+5})^2}$ ✓

$f''(x) = \frac{4\sqrt{x^2+4x+5} - (2x+4) \cdot (2x+4)}{(2\sqrt{x^2+4x+5}) \cdot (x^2+4x+5)}$

$f''(x) = \frac{4\sqrt{x^2+4x+5} - (4x^2+8x+8x+16)}{2\sqrt{x^2+4x+5} \cdot (x^2+4x+5)}$

$f''(x) = \frac{4\sqrt{x^2+4x+5} - (4x^2+16x+16)}{2\sqrt{x^2+4x+5} \cdot (x^2+4x+5)}$

MATEMATIKA 1: Ispit se održava sukladno objavljenim pravilima. Na snazi je Pravilnik o stegovnoj odgovornosti studenata. **PIŠITE DVOSTRANO!** Obavezno popuniti sva polja ispod↓↓ C7

IME I PREZIME: Damir Ćavar **BROJ INDEKSA:** [redacted] 17-2-0237-2012

ZAOKRUŽITI AKO ŽELITE: ustmeni kod prof. Uglešića

POPUNJAVA NASTAVNIK
Broj ↓ bodova

1. Među kompleksnim brojevima odrediti rješenja jednadžbe $z^3 = -(-i)^{843}$. *Prikazati rješenja u kompleksnoj ravnini!* 10+5

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4. Za funkciju: $f(x) = \sqrt{x^2 + 4x + 5}$ treba:
   (a) pronaći drugu derivaciju 10
   (b) na temelju ispitivanja toka funkcije skicirati graf 20(graf) 5

5. Odrediti i provjeriti rješenje $\lim_{x \to +\infty} \left(\dfrac{n}{n-4}\right)^n =$ 8+2

6. Riješiti jednadžbu $\log_{10} x = \arctan x$ grafičkom metodom. *Provjeriti uvrštavanjem!* 10+5

Ukupno: 10

1. $z^3 = -(i)^{843}$

$z^3 = -(-1)$

$z^3 - 1 = 0$

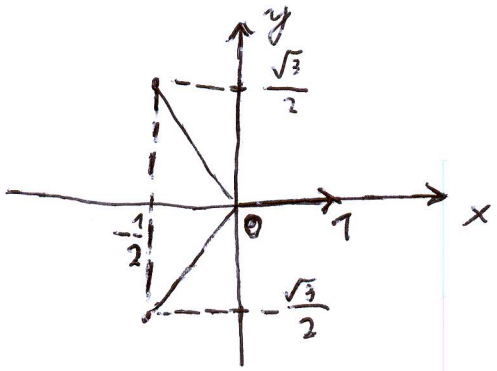
$(z-1)(z^2+z+1) = 0$

$z_1 = 1$

$z_2 = -\frac{1}{2} = \frac{\sqrt{3}}{2} i$

$z_3 = -\frac{1}{2} + \frac{\sqrt{3}}{2} i$

$(-i)^{843} = i^{843} = i^2 = -1$



(4.) $f(x)=\sqrt{x^2+4x+5}$

b) 1. $x^2+4x+5 \geq 0$ $\qquad D=\langle -\infty, +\infty \rangle$

$x_{1,2}=\frac{-2\pm\sqrt{4-20}}{2} \notin \mathbb{R}$

2. nema vertikalnih asimptota
-||- horizontalnih -||-
-||- kosih -||-

3. $f(-x)=\sqrt{x^2-4x+5}$ Funkcija nije ni parna ni neparna, ni periodična.

4. $f(0)=\sqrt{5}$ $\quad A(0,\sqrt{5})$

5. $f'(x)=\frac{4x+2}{2\sqrt{x^2+4x+5}}=\frac{x+1}{\sqrt{x^2+4x+5}}$ ✗

$f''(x)=\frac{\sqrt{x^2+4x+5}+(x+1)\cdot\frac{x+1}{\sqrt{x^2+4x+5}}}{x^2+4x+5}=\frac{\frac{x^2+4x+5+x^2+4x+1}{\sqrt{x^2+4x+5}}}{\frac{x^2+4x+5}{1}}=\frac{2(x^2+4x+3)}{\sqrt{(x^2+4x+5)^3}}$

6. $f'(x)=0$

$x=-1 \qquad f(-1)=\sqrt{1-4+5}=2$

7. MONOTONOST

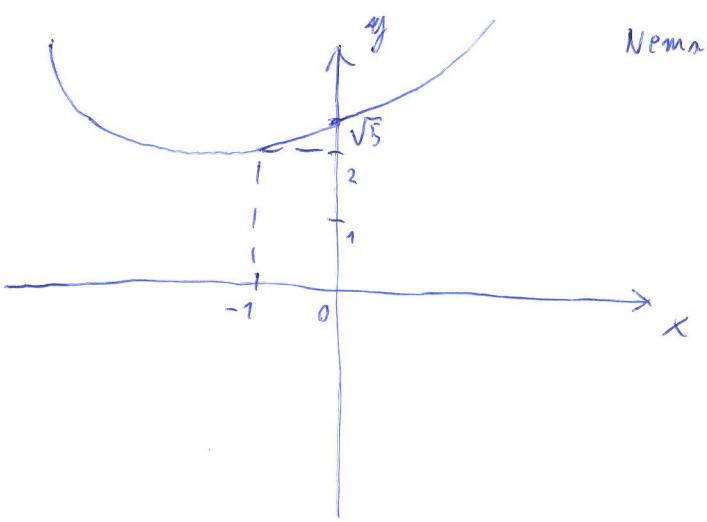
	$-\infty$		-1		$+\infty$
$f(x)$		↘		↗	
$f'(x)$		−		+	

8. $m(-1,2)$
↓
lokalni i globalni minimum

9. $f''(x)=0$

$x^2+4x+3\neq 0, \forall x \in \mathbb{R}$

Nema točki infleksije



5

Damir Ćavar

(2.) $5x + 4z + 2t = 3$

$x - y + 2z + t = 1$

$4x + y + 2z = 1$

$x + y + z + t = 0$

$$\left[\begin{array}{cccc|c} 5 & 0 & 4 & 2 & 3 \\ 1 & -1 & 2 & 1 & 1 \\ 4 & 1 & 2 & 0 & 1 \\ 1 & 1 & 1 & 1 & 0 \end{array}\right] \quad 1:5 \quad 1\cdot(-1) \quad 1\cdot(-4) \quad 1\cdot(-1)$$

$$\sim \left[\begin{array}{cccc|c} 1 & 0 & \frac{4}{5} & \frac{2}{5} & \frac{3}{5} \\ 0 & 1 & -\frac{6}{5} & -\frac{3}{5} & -\frac{2}{5} \\ 0 & 1 & -\frac{6}{5} & -\frac{8}{5} & -\frac{7}{5} \\ 0 & 1 & \frac{1}{5} & \frac{3}{5} & -\frac{3}{5} \end{array}\right] \quad 1\cdot(-1) \sim$$

$$\sim \left[\begin{array}{cccc|c} 1 & 0 & \frac{4}{5} & \frac{2}{5} & \frac{3}{5} \\ 0 & 1 & -\frac{6}{5} & -\frac{3}{5} & -\frac{2}{5} \\ 0 & 0 & 0 & -1 & -1 \\ 0 & 0 & \frac{7}{5} & \frac{6}{5} & -\frac{1}{5} \end{array}\right] \sim \left[\begin{array}{cccc|c} 1 & 0 & \frac{4}{5} & \frac{2}{5} & \frac{3}{5} \\ 0 & 1 & -\frac{6}{5} & -\frac{3}{5} & -\frac{2}{5} \\ 0 & 0 & \frac{7}{5} & \frac{6}{5} & -\frac{1}{5} \\ 0 & 0 & 0 & -1 & -1 \end{array}\right] \quad 1:\frac{7}{5} \quad 1\cdot(-1)$$

$$\sim \left[\begin{array}{cccc|c} 1 & 0 & \frac{4}{5} & \frac{2}{5} & \frac{3}{5} \\ 0 & 1 & -\frac{6}{5} & -\frac{3}{5} & -\frac{2}{5} \\ 0 & 0 & 1 & \frac{6}{7} & -\frac{1}{7} \\ 0 & 0 & 0 & 1 & 1 \end{array}\right] \quad 1\cdot\left(-\frac{6}{7}\right) \quad 1\cdot\frac{3}{5} \quad 1\cdot\left(-\frac{2}{5}\right)$$

$$\sim \left[\begin{array}{cccc|c} 1 & 0 & \frac{4}{5} & 0 & \frac{1}{5} \\ 0 & 1 & -\frac{6}{5} & 0 & \frac{1}{5} \\ 0 & 0 & 1 & 0 & -1 \\ 0 & 0 & 0 & 1 & 1 \end{array}\right] \quad 1\cdot\frac{6}{5} \quad 1\cdot\left(-\frac{4}{5}\right) \sim \left[\begin{array}{cccc|c} 1 & 0 & 0 & 0 & 1 \\ 0 & 1 & 0 & 0 & -1 \\ 0 & 0 & 1 & 0 & -1 \\ 0 & 0 & 0 & 1 & 1 \end{array}\right]$$

$$\begin{bmatrix} x \\ y \\ z \\ t \end{bmatrix} = \begin{bmatrix} 1 \\ -1 \\ -1 \\ 1 \end{bmatrix} \checkmark$$

ROVJERA ?

10

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IME I PREZIME: MATE RADAŠ **BROJ INDEKSA:** 17-2-0183-2012

ZAOKRUŽITI AKO ŽELITE: ustmeni kod prof. Uglešića

POPUNJAVA NASTAVNIK
Broj ↓ bodova

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Ukupno:

2)

$$\left[\begin{array}{cccc|c} 5 & 0 & 4 & 2 & 3 \\ 1 & -1 & 2 & 1 & 1 \\ 4 & 1 & 2 & 0 & 1 \\ 1 & 1 & 1 & 1 & 0 \end{array}\right] \overset{1.\Pi \leftrightarrow 4.\Pi}{\sim} \left[\begin{array}{cccc|c} 1 & 1 & 1 & 1 & 0 \\ 1 & -1 & 2 & 1 & 1 \\ 4 & 1 & 2 & 0 & 1 \\ 5 & 0 & 4 & 2 & 3 \end{array}\right] \begin{array}{l} \\ 2.\Pi - 1.\Pi \\ 3.\Pi - 4 \times 1.\Pi \\ 4.\Pi - 5 \times 1.\Pi \end{array} \sim$$

$$\left[\begin{array}{cccc|c} 1 & 1 & 1 & 1 & 0 \\ 0 & -2 & 1 & 0 & 1 \\ 0 & -3 & -2 & -4 & 1 \\ 0 & -5 & -1 & -3 & 3 \end{array}\right] \begin{array}{l} \\ 2.\Pi - 3.\Pi \\ \\ \end{array} \sim \left[\begin{array}{cccc|c} 1 & 1 & 1 & 1 & 0 \\ 0 & 1 & 3 & 4 & 0 \\ 0 & -3 & -2 & -4 & 1 \\ 0 & -5 & -1 & -3 & 3 \end{array}\right] \begin{array}{l} \\ \\ 3.\Pi + 3 \times 2.\Pi \\ 4.\Pi + 5 \times 2.\Pi \end{array} \sim$$

$$\left[\begin{array}{cccc|c} 1 & 1 & 1 & 1 & 0 \\ 0 & 1 & 3 & 4 & 0 \\ 0 & 0 & 7 & 8 & 1 \\ 0 & 0 & 14 & 17 & 3 \end{array}\right] \begin{array}{l} \\ \\ \\ 4.\Pi - 2 \times 3.\Pi \end{array} \sim \left[\begin{array}{cccc|c} 1 & 1 & 1 & 1 & 0 \\ 0 & 1 & 3 & 4 & 0 \\ 0 & 0 & 7 & 8 & 1 \\ 0 & 0 & 0 & 1 & 1 \end{array}\right] \rightarrow$$

$x + y + z + t = 0$

$y + 3z + 4t = 0$

$7z + 8t = 1$

$t = 1$

$x+y+z+t=0 \Rightarrow x-1-1+1=0 \Rightarrow x-1=0 \Rightarrow \underline{x=1}$

$y+3z+4t=0 \Rightarrow y+3\cdot(-1)+4\cdot 1=0 \Rightarrow y-3+4=0 \Rightarrow \underline{y=-1}$

$7z+8t=1 \Rightarrow 7z+8\cdot 1=1 \Rightarrow 7z=-7 \Rightarrow \underline{z=-1}$

$\underline{t=1}$

Provjera:

$5x+4z+2t=3 \Rightarrow 5\cdot 1+4\cdot(-1)+2\cdot 1=3 \Rightarrow 3=3$ ✓

$x-y+2z+t=1 \Rightarrow 1-(-1)+2\cdot(-1)+1=1 \Rightarrow 1+1-2+1=1 \Rightarrow 1=1$ ✓

$4x+y+2z=1 \Rightarrow 4\cdot 1-1+2\cdot(-1)=1 \Rightarrow 4-1-2=1 \Rightarrow 1=1$ ✓

$x+y+z+t=0 \Rightarrow 1-1-1+1=0 \Rightarrow 0=0$ ✓

✓

3. $\frac{x+1}{\sqrt{x^2-x}}-1>0$

$\frac{x+1}{\sqrt{x^2-x}} > 1 \mid \cdot\sqrt{x^2-x}$

$x+1 > \sqrt{x^2-x} \mid^2$

$(x+1)^2 > x^2-x$

$x^2+2x+1 > x^2-x$

$x^2+2x+1-x^2+x>0$

$3x+1>0$

$3x>-1 \mid :3$

$x>-\frac{1}{3}$ ✗

1. uvjet

$x^2-x\neq 0$

$x(x-1)\neq 0$

$x_1\neq 0$

$\underline{x_2\neq 1}$

2. uvjet

$\sqrt{x^2-x}>0 \mid^2$

$x^2-x>0$

$x(x-1)>0$

$x_3>0$

$x-1>0$

$\underline{x>1}$

6. $\log_{10} x = \operatorname{arctan} x$

0

5. $\lim_{n\to+\infty} \left(\frac{n}{n-4}\right)^n = \left[\frac{+\infty}{+\infty}\right] \overset{L'H}{=} \lim_{n\to+\infty} = n\left(\frac{n}{n-4}\right)^{n-1}$

$\overset{L'H}{=} n(n-1)\left(\frac{n}{n-4}\right)^{n-1-n} = n(n-1)\frac{n-4}{n} = \lim_{n\to+\infty}$

$(n-1)(n-4) = \lim_{n\to\infty} n^2-4n-n-4 \overset{L'H}{=} \lim_{n\to+\infty} n^2-5n-4 \overset{L'H}{=} \lim_{n\to+\infty}$

$2n-5 = +\infty-5 = +\infty$

MATE RADAS V

4.) $f(x) = \sqrt{x^2+4x+5}$

$f(x) = x + 2x^{\frac{1}{2}} + 2.24$ ✗

$f'(x) = 1 + x^{-\frac{3}{2}}$

$f''(x) = -\frac{3}{2}x^{-\frac{5}{2}}$

1.)

$z^3 = -(-i)^{843}$

$z^3 = -(-i)^3$

$z^3 = i^3$

$z^3 = -i \mid \sqrt[3]{}$

$z = \sqrt[3]{-i}$ ∅

$W = x + yi = 0 - i$

843 : 4 = 210
04
03

MATEMATIKA 1: Ispit se održava sukladno objavljenim pravilima. Na snazi je Pravilnik o stegovnoj odgovornosti studenata. **PIŠITE DVOSTRANO!** Obavezno popuniti sva polja ispod⇓⇓ C7

IME I PREZIME: LUKA KNEŽEVIĆ **BROJ INDEKSA:** 17-2-1120-201

ZAOKRUŽITI AKO ŽELITE: ustmeni kod prof. Uglešića

POPUNJAVA NASTAVNIK
Broj ↓ podova

1. Među kompleksnim brojevima odrediti rješenja jednadžbe $z^3 = -(-i)^{843}$. *Prikazati rješenja u kompleksnoj ravnini!* 10+5

2. Riješi sustav Gaussovom metodom i obavezno provjeri rješenje: 10+5

$$\begin{aligned} 5x + 4z + 2t &= 3 \\ x - y + 2z + t &= 1 \\ 4x + y + 2z &= 1 \\ x + y + z + t &= 0 \end{aligned}$$

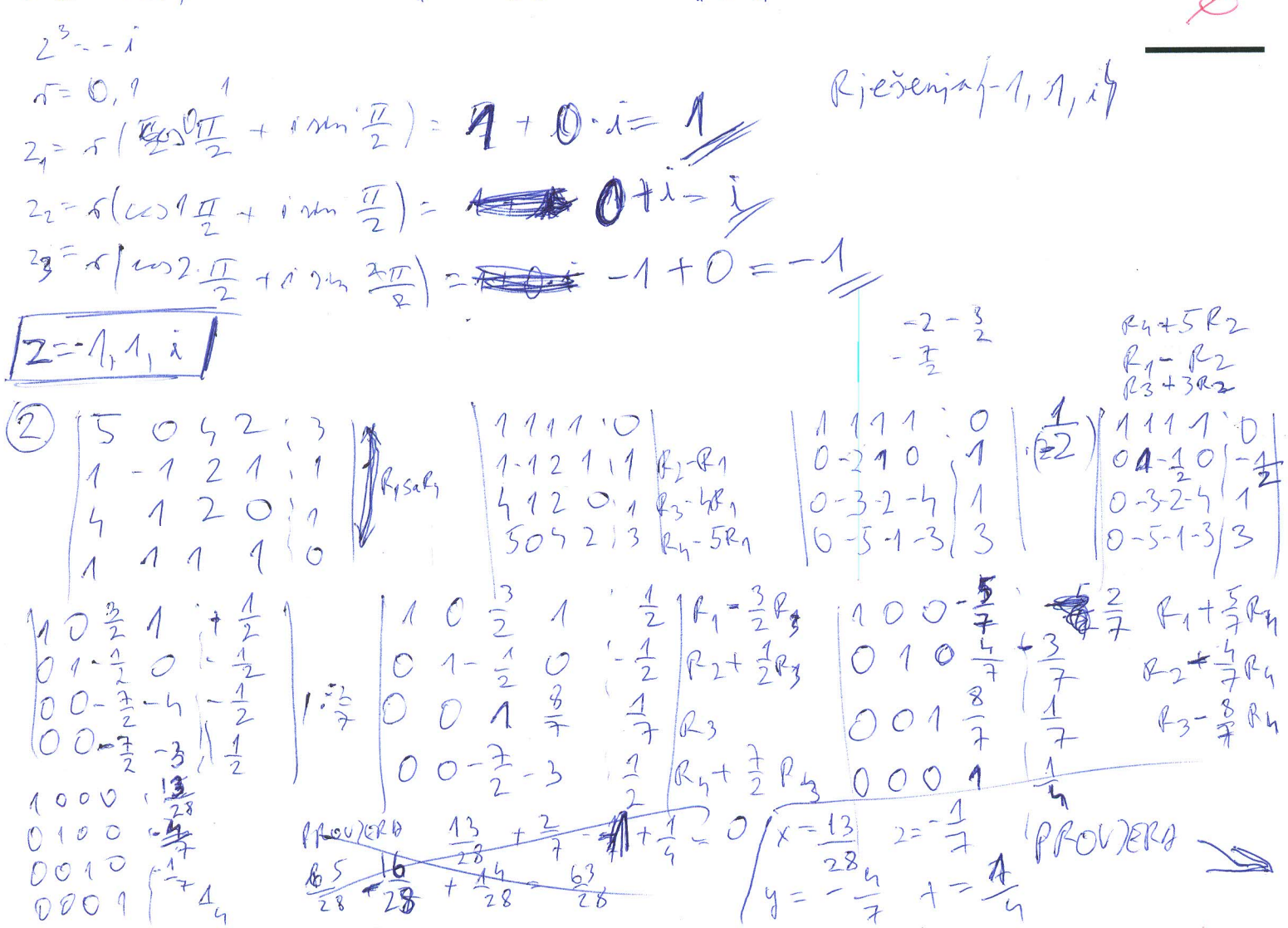
3. Odrediti kada je $\dfrac{x+1}{\sqrt{x^2 - x}} - 1 > 0$. Obavezno uvrštavanjem provjeriti rješenje jednadžbi koje se javljaju tokom rješavanja nejednadžbe. 13+2

4. Za funkciju: $f(x) = \sqrt{x^2 + 4x + 5}$ treba:
   (a) pronaći drugu derivaciju 10
   (b) na temelju ispitivanja toka funkcije skicirati graf 20(graf)

5. Odrediti i provjeriti rješenje $\lim_{x \to +\infty} \left(\dfrac{n}{n-4}\right)^n =$ 8+2

6. Riješiti jednadžbu $\log_{10} x = \arctan x$ grafičkom metodom. *Provjeriti uvrštavanjem!* 10+5

Ukupno:



3. $\sqrt{x^2-x-1} > 0$

$x^2-x-1 \geq 0$

$x^2-x-1=0$

$x_{1,2} = \frac{1 \pm \sqrt{1+4}}{2} = \frac{1 \pm \sqrt{5}}{2}$

$x_1 = \frac{1+\sqrt{5}}{2} \approx 1.618$

$x_2 = \frac{1-\sqrt{5}}{2} \approx -0.618$

	$-\infty$	-1	-0.618	1	1.618	2	$+\infty$
$\sqrt{x^2-x-1}$		−		−		+	
$x+1$		+		+		+	
$\sqrt{x^2-x-1}$		+		+		+	

~~2. $x < -0.618$~~

2. $x \geq 1$ vrijedi $\frac{x+1}{x^2-x-1}$

4. $\sqrt{x^2+4x+5}$

$f(x) = (x^2+4x+5)^{-1} = -1 \cdot (x^2+4x+5)^{-2} \cdot 2x+4 = \frac{2x+4}{(x^2+4x+5)^2} = \frac{2x+4}{(-x^2-4x-5)^2}$

$f''(x) = \left(\frac{2x+4}{x^2+4x+5}\right)' = \frac{(2x+4)' \cdot (x^2+4x+5) - (2x+4) \cdot (x^2+4x+5)'}{(x^2+4x+5)^2}$

$= 2 \cdot (x^2+4x+5) - (2x+4) \cdot 2x+4$

$= 2x^2+8x+10 - (4x^2+8x+8x+16)$

$= 2x^2+8x+10-4x^2-16x-16$

$= -2x^2-8x-6$

5. $\lim_{n \to \infty} \left(\frac{n}{n-4}\right)^n$

$n-4=0$

$n=4$

$D(A) = \mathbb{R} \setminus \{4\}$

$\lim_{n \to 4} \left(\frac{n}{n-4}\right)^4 = \left(\frac{4}{4-4}\right)^4 = \left(\frac{4}{0}\right)^4 = +\infty$

PROVJERA

$\left(\frac{4}{4-4}\right)^4 = \frac{4}{0} = \infty$

H.D

$\lim_{n \to \infty} \left(\frac{n}{n-4}\right)^n = \frac{\infty^\infty}{\infty} = \pm\infty \quad \frac{1}{1} = 1$ $\boxed{H.D = 1}$

KOSE ASIMPTOTE NEMA.

PROVJERA MATRICE

$\begin{vmatrix} 5 & 4 & 0 & 2 \\ 1 & -1 & 2 & 1 \\ 4 & 1 & 2 & 0 \\ 1 & 1 & 1 & 0 \end{vmatrix} \cdot \begin{vmatrix} \frac{13}{28} \\ -\frac{4}{7} \\ -\frac{1}{7} \\ \frac{1}{7} \end{vmatrix} = \begin{vmatrix} 3 \\ 1 \\ 1 \\ 0 \end{vmatrix}$

$x = \frac{13}{28}$

$y = -\frac{4}{7}$

$z = -\frac{1}{7}$

$t = \frac{1}{7}$

4. $f(x) = \sqrt{x^2+4x+5}$ ZUNAJ D ZNEZEVI

$f(x)' = (x^2+4x+5)^{-1} = -1\cdot(x^2+4x+5)^{-2}\cdot 2x+4 = \frac{2x+4}{(x^2+4x+5)^2} = \frac{2x+4}{-(-x^2-4x-5)^2}$

$-(x^2+4x+5)^2$

$f''(x) = \frac{(2x+4)'\cdot -(x^2+4x+5)^2 - 2x+4\cdot(x^2+4x+5)^2\cdot 1}{(x^2+4x+5)^4}$

$= 2x\cdot -(x^2+4x+5)^2 - 2x+4$

$= -2(x^2+4x+5)\cdot(2x+4)$

$f''(x) = \frac{(2x+4)'\cdot(-x^2-4x-5)^2 - 2x+4\cdot(-x^2-4x-5)^2}{(-x^2-4x-5)^4} =$

$= \frac{2x\cdot(-x^2-4x-5)^2 - (2x+4)\cdot(4x^3+24x^2+52x+40)}{(-x^2-4x-5)^4}$

$= \frac{2x\cdot(-x^2-4x-5)^2 - (2x+4)\cdot(4x^3+24x^2+52x+40)}{(-x^2-4x-5)^4}$

$(-2x^2-8x)-10(-2x+4)$

$= (-2x^2-8x-10)\cdot(-2x+4)$

$= 4x^3+8x^2+16x^2+32x+20x+40$

$= 4x^3+24x^2+52x+40$

$(-x^2-4x-5)^2 = 2\cdot(-x^2-4x-5)\cdot(-x^2-4x-5)'$

$= 2\cdot(-x^2-4x-5)\cdot(-2x-4)$

$= (-4x-8)(x^2-4x-5)$

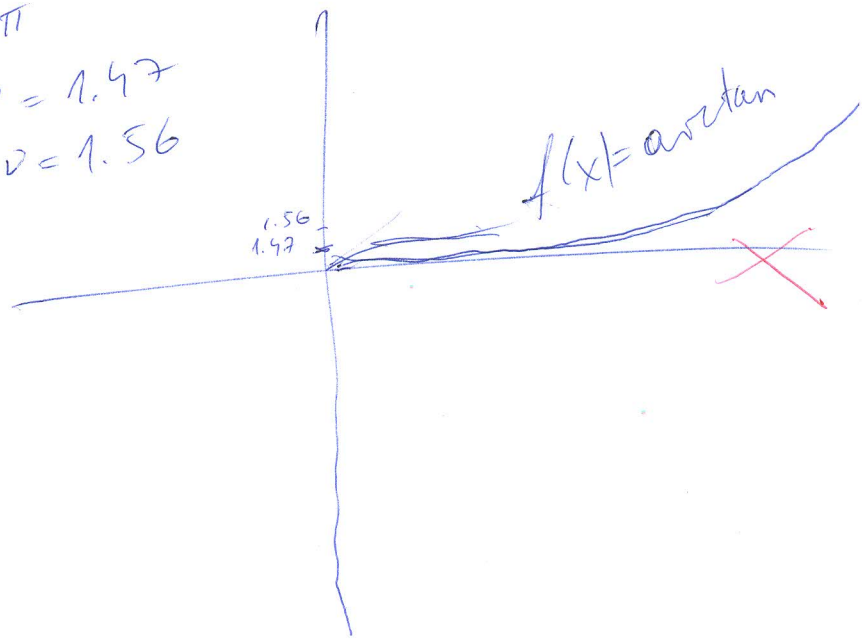
1. PRIKAZ UROVNIN

6. $\log_{10} x = \arctan x$

$x = \frac{1}{4}\pi$

$x - 10 = 1.47$

$x = 10^{\circ} = 1.56$



MATEMATIKA 1: Ispit se održava sukladno objavljenim pravilima. Na snazi je Pravilnik o stegovnoj odgovornosti studenata. **PIŠITE DVOSTRANO!** Obavezno popuniti sva polja ispod⇓⇓

IME I PREZIME: Filip Štrlek **BROJ INDEKSA:** 17-2-0230-2012

ZAOKRUŽITI AKO ŽELITE: ustmeni kod prof. Uglešića

C7

POPUNJAVA NASTAVNIK
Broj ↓ bodova

1. Među kompleksnim brojevima odrediti rješenja jednadžbe $z^3 = -(-i)^{843}$. *Prikazati rješenja u kompleksnoj ravnini!* 10+5
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Ukupno: 0

2.

$$\left[\begin{array}{cccc|c} 5 & 0 & 4 & 2 & 3 \\ 1 & -1 & 2 & 1 & 1 \\ 4 & 1 & 1 & 0 & 1 \\ 1 & 1 & 1 & 1 & 0 \end{array}\right] \approx \left[\begin{array}{cccc|c} 1 & -1 & 3 & 2 & 2 \\ 1 & -1 & 2 & 1 & 1 \\ 4 & 1 & 1 & 0 & 1 \\ 1 & 1 & 1 & 1 & 0 \end{array}\right] \approx$$

$$\left[\begin{array}{cccc|c} 0 & 0 & 1 & 1 & 1 \\ 1 & -1 & 1 & 0 & 0 \\ 4 & 1 & 1 & 0 & 1 \\ 1 & 1 & 1 & 1 & 0 \end{array}\right] \approx \left[\begin{array}{cccc|c} 0 & 0 & 1 & 1 & 1 \\ 1 & -1 & 1 & 0 & 0 \\ 3 & 2 & 0 & 0 & 1 \\ 1 & 1 & 0 & 0 & -1 \end{array}\right] \approx \left[\begin{array}{cccc|c} 0 & 0 & 1 & 1 & 1 \\ 1 & -1 & 1 & 0 & 0 \\ 1 & 0 & 0 & 0 & 3 \\ 0 & 1 & 0 & 0 & -4 \end{array}\right] \approx$$

$$\left[\begin{array}{cccc|c} 0 & 0 & 1 & 1 & 1 \\ 0 & -1 & 1 & 0 & -3 \\ 1 & 0 & 0 & 0 & 3 \\ 0 & 1 & 0 & 0 & -4 \end{array}\right] \approx \left[\begin{array}{cccc|c} 0 & 0 & 1 & 1 & 1 \\ 0 & 0 & 1 & 0 & -7 \\ 1 & 0 & 0 & 0 & 3 \\ 0 & 1 & 0 & 0 & -4 \end{array}\right] \approx \left[\begin{array}{cccc|c} 0 & 0 & 0 & 1 & 8 \\ 0 & 0 & 1 & 0 & -7 \\ 1 & 0 & 0 & 0 & 3 \\ 0 & 1 & 0 & 0 & -4 \end{array}\right]$$

$$\left[\begin{array}{cccc|c} 1 & 0 & 0 & 0 & 3 \\ 0 & 1 & 0 & 0 & -4 \\ 0 & 0 & 1 & 0 & -7 \\ 0 & 0 & 0 & 1 & 8 \end{array}\right] \begin{array}{l} x = 3 \\ y = -4 \\ z = -7 \\ t = 8 \end{array}$$

$x + y + z + t = 0$

$3 - 4 - 7 + 8 = 0$

$-1 + 1 = 0$

$0 = 0$ ✓

$x - y + 2z + t = 1$

$3 - (-4) + 2 \cdot (-7) + 8 = 1$

$3 + 4 - 14 + 8 = 1$

$7 - 14 + 8 = 1$

$15 - 14 = 1$

$1 = 1$ ✓ DALJE PROVJERE ?

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(4) $f(x) = \sqrt{x^2 + 4x + 5}$

a) $f'(x) = 2x + 4$

$f''(x) = 2$

b) (1) DOMENA

$x^2 + 4x + 5 \geq 0$

$a = 1$
$b = 4$
$c = 5$

$D = b^2 - 4ac$

$D = 16 - 4 \cdot 1 \cdot 5$

$D = 16 - 20$

$D = -4 \Rightarrow$ NEMA REALNIH RJEŠENJA

(2) PRESJEK

$x = 0$ $\quad A(0, 2{,}24)$

$y = \sqrt{5}$

$y = 2{,}24$

$y = 0$

$\Rightarrow$ NEMA Rj.

(3) ASIMPTOTE

$\Rightarrow$ F-ja JE POLINOM, PA NEMA ASIMPTOTE

(4) STACIONARNE TOČKE

$f'(x) = 2x + 4$

$y' = 0$

$2x = -4$

$\boxed{x = -2}$

$x(x + 4) + 5 \geq 0$

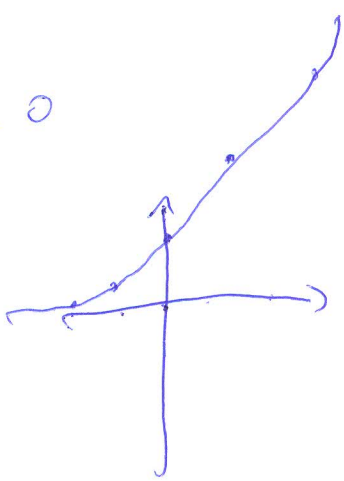
$x_1 = 0$

$x_2 = -9$

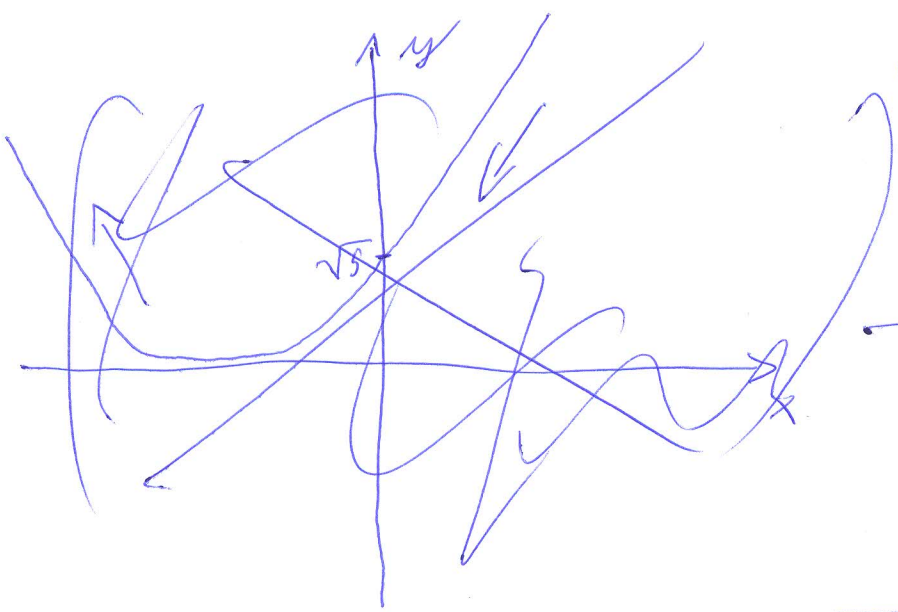
	$-\infty$		-2		$+\infty$
$f'(x)$		$-$		$+$	
$f(x)$		↘		↗	

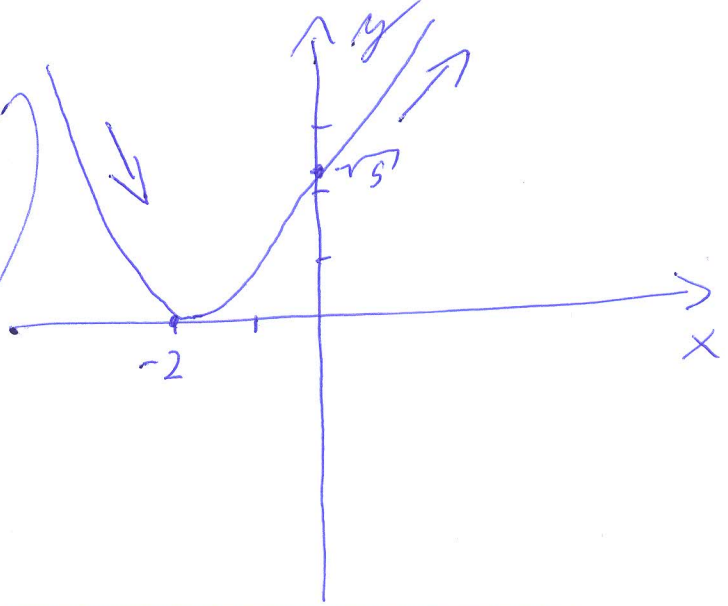
$x^2 + 4x + 5 \geq 0$

x	y
0	5
1	10
-1	2
2	17
-2	1
3	26
-3	2



x	y





① $z^3 = -(-1)^{843}$

$z^3 = i$ ✗

$k = 0, 1, 2 \ (n-1)$

$r = 1 \ (\sqrt{x^2+y^2}(1)^2 = 1)$

$tg\,\varphi = \frac{y}{x} = 0$

$\varphi = 0$

$843 : 4 = 210$

③

$i^3 = -i$

$ZA\ k+0 = 0+0 = 0$

$k = 0$

$z_1 = 1\left(\cos\frac{0+2k\pi}{3} + i\sin\frac{0+2k\pi}{3}\right)$

$z_1 = 1(\cos 0 + i\sin 0)$

$z_1 = 1$

$z_1 = 1 + (0, i)$

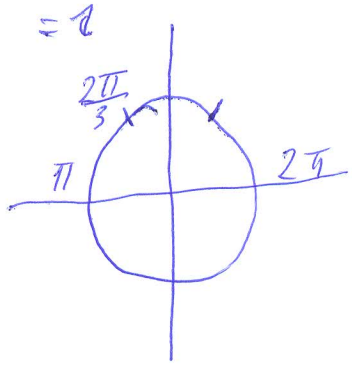
$Re = 1$

$Im = 0$

$ZA\ k+1 = 0+1 = 1$

$z_2 = 1\left(\cos\frac{0+2k\pi}{3} + i\sin\frac{0+2k\pi}{3}\right)$

$= 1\left(\cos\frac{2\pi}{3} + i\sin\frac{2\pi}{3}\right)$



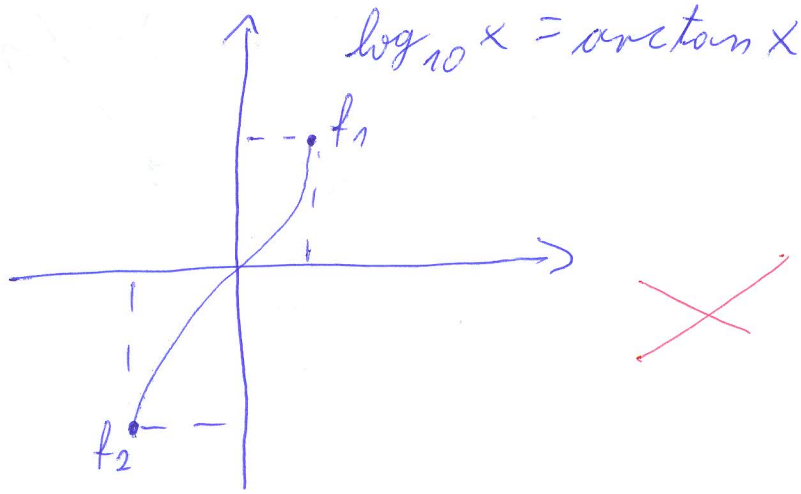
$= 1 + \frac{\sqrt{3}}{2}\,i$

$z_2 = 1 + \frac{\sqrt{3}}{2}\,i$

$Re = 1$

$Im = \frac{\sqrt{3}}{2}$

6.



3.

$$\frac{x+1}{\sqrt{x^2-x}} - 1 > 0$$

$x + 1 = 0$

$x = -1$

$x^2 - x \geq 0$

$x(x-1) \geq 0$

$x_1 = 0$

$x_2 = 1$

$x_{1/2} = \pm 1$

$x_3 = 0$

$x = 0$

$$\frac{0+1}{\sqrt{0^2-0}} - 1 > 0$$

$-1 \not> 0$

$x = -1$

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

$-1 \not> 0$

$x = 1$

$$\frac{1+1}{\sqrt{1-1}} - 1 > 0$$

$-1 \not> 0$

$\Rightarrow$ SUSTAV NEMA RJEŠENJA KADA JE

$$\frac{x+1}{\sqrt{x^2-x}} - 1 > 0$$

5. $\lim_{x \to +\infty} \left(\frac{n}{n-4} \right)^n = \frac{n^n}{(n-4)^n} =$

$= \frac{n^n}{n^2 - 8n + 16} \Big| : n^n = \frac{1}{1} = 1$ ✗

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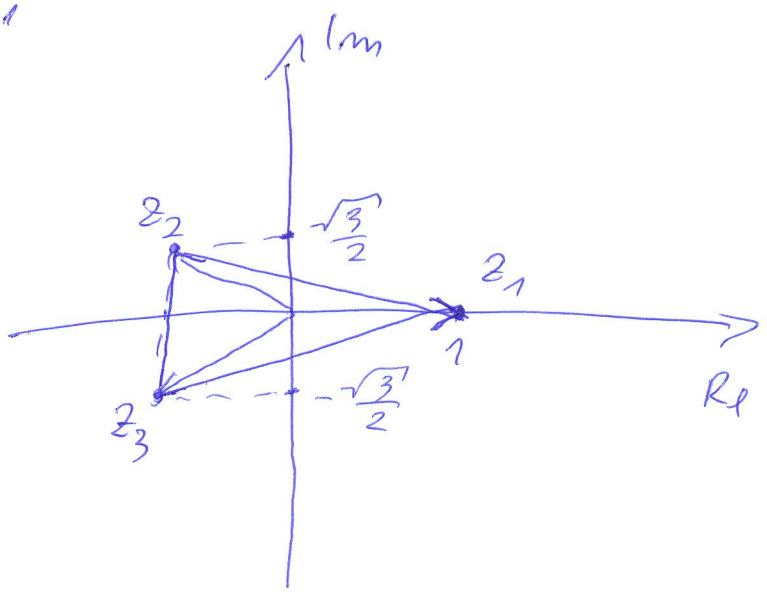
7. $z_3 = 1 \left(\cos \frac{4\pi}{3} + i \sin \frac{4\pi}{3} \right)$

$z_3 = 1 \cdot - \frac{\sqrt{3}}{2} \cdot i$

$z_1 = 1$

$z_2 = -1 + \frac{\sqrt{3}}{2} \cdot i$

$z_3 = -1 - \frac{\sqrt{3}}{2} \cdot i$



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IME I PREZIME: JOSIP MARIĆ **BROJ INDEKSA:** 17-2-0227-2012

ZAOKRUŽITI AKO ŽELITE: ustmeni kod prof. Uglešića

POPUNJAVA NASTAVNIK Broj ↓ bodova

1. Među kompleksnim brojevima odrediti rješenja jednadžbe $z^3 = -(-i)^{843}$. *Prikazati rješenja u kompleksnoj ravnini!* 10+5

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1
-2
-1
1

3. Odrediti kada je $\dfrac{x+1}{\sqrt{x^2 - x}} - 1 > 0$. Obavezno uvrštavanjem provjeriti rješenje jednadžbi koje se javljaju tokom rješavanja nejednadžbe. 13+2

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Ukupno: 0

(2.)

$$\left[\begin{array}{cccc|c} 5 & 0 & 4 & 2 & 3 \\ 1 & -1 & 2 & 1 & 1 \\ 4 & 1 & 2 & 0 & 1 \\ 1 & 1 & 1 & 1 & 0 \end{array}\right] \begin{matrix} \\ \\ \\ \text{I} - \text{III} \end{matrix} \sim \left[\begin{array}{cccc|c} 1 & -1 & 2 & 2 & 2 \\ 1 & -1 & 2 & 1 & 1 \\ 4 & 1 & 2 & 0 & 1 \\ 1 & 1 & 1 & 1 & 0 \end{array}\right] \begin{matrix} \\ \text{II} - \text{IV} \\ \text{III} - 4\text{IV} \\ \\ \end{matrix}$$

$$\sim \left[\begin{array}{cccc|c} 1 & -1 & 2 & 2 & 2 \\ 0 & -2 & 1 & 0 & 1 \\ 0 & -3 & -2 & -4 & 1 \\ 1 & 1 & 1 & 1 & 0 \end{array}\right] \begin{matrix} \\ \\ \\ \text{IV} - \text{I} \end{matrix} \sim \left[\begin{array}{cccc|c} 1 & -1 & 2 & 2 & 2 \\ 0 & -2 & 1 & 0 & 1 \\ 0 & -3 & -2 & -4 & 1 \\ 0 & 2 & -1 & -1 & -2 \end{array}\right] \begin{matrix} \\ \text{II} - \text{III} \\ \\ \\ \end{matrix} \sim \left[\begin{array}{cccc|c} 1 & -1 & 2 & 2 & 2 \\ 0 & 1 & 3 & 4 & 0 \\ 0 & -3 & -2 & -4 & 1 \\ 0 & 2 & -1 & -1 & -2 \end{array}\right]$$

$$\begin{matrix} \text{I} + \text{II} \\ \text{II} + \text{IV} \end{matrix} \sim \left[\begin{array}{cccc|c} 1 & 0 & 5 & 6 & 2 \\ 0 & 1 & 3 & 4 & 0 \\ 0 & -1 & -3 & -5 & -1 \\ 0 & 2 & -1 & -1 & -2 \end{array}\right] \begin{matrix} \\ \\ \text{III} + \text{II} \\ \\ \end{matrix} \sim \left[\begin{array}{cccc|c} 1 & 0 & 5 & 6 & 2 \\ 0 & 1 & 3 & 4 & 0 \\ 0 & 0 & 0 & -1 & -1 \\ 0 & 2 & -1 & -1 & -2 \end{array}\right] \begin{matrix} \text{I} - \text{II} \\ \\ \\ \text{IV} - \text{II} \\ \end{matrix} \sim \left[\begin{array}{c} 1 \\ \\ \\ \\ \end{array}\right.$$

$$\left[\begin{array}{cccc|c} 1 & -1 & 2 & 2 & 2 \\ 0 & 1 & 3 & 4 & 0 \\ 0 & -3 & -2 & -4 & 1 \\ 0 & 2 & 1 & 1 & -2 \end{array}\right] \begin{array}{l} \text{I}+\text{II} \\ \\ \text{III}+\text{IV} \\ \\ \end{array} \sim \left[\begin{array}{cccc|c} 1 & 0 & 5 & 6 & 2 \\ 0 & 1 & 3 & 4 & 0 \\ 0 & -1 & -1 & -3 & -1 \\ 0 & 2 & 1 & 1 & -2 \end{array}\right] \begin{array}{l} \\ \\ \text{III}+\text{II} \\ \text{IV}+2\text{III} \end{array} \sim \left[\begin{array}{cccc|c} 1 & 0 & 5 & 6 & 2 \\ 0 & 1 & 3 & 4 & 0 \\ 0 & 0 & 2 & 1 & -1 \\ 0 & 0 & -1 & -5 & -4 \end{array}\right] \begin{array}{l} \text{I}+\text{IV} \\ \text{II}-\text{III} \\ \\ \\ \end{array} \sim$$

$$\left[\begin{array}{cccc|c} 1 & 0 & 4 & +1 & -2 \\ 0 & 1 & 1 & 3 & 0 \\ 0 & 0 & 2 & 1 & -1 \\ 0 & 0 & -1 & -5 & -4 \end{array}\right] \begin{array}{l} \\ \text{II}+\text{IV} \\ \text{III}+\text{IV} \\ \\ \end{array} \sim \left[\begin{array}{cccc|c} 1 & 0 & 4 & 1 & -2 \\ 0 & 1 & 0 & -2 & -4 \\ 0 & 0 & 1 & -4 & -5 \\ 0 & 0 & -1 & -5 & -4 \end{array}\right] \begin{array}{l} \\ \\ \\ \text{IV}+\text{III} \end{array} \sim \left[\begin{array}{cccc|c} 1 & 0 & 4 & 1 & -2 \\ 0 & 1 & 0 & -2 & -4 \\ 0 & 0 & 1 & -4 & -5 \\ 0 & 0 & 0 & -9 & -9 \end{array}\right] \begin{array}{l} \\ \\ \\ \text{IV}:(-9) \end{array}$$

$$\sim \left[\begin{array}{cccc|c} 1 & 0 & 4 & 1 & -2 \\ 0 & 1 & 0 & -2 & -4 \\ 0 & 0 & 1 & -4 & -5 \\ 0 & 0 & 0 & 1 & 1 \end{array}\right] \begin{array}{l} \text{I}-\text{IV} \\ \text{II}+2\text{IV} \\ \text{III}+4\text{IV} \\ \\ \end{array} \sim \left[\begin{array}{cccc|c} 1 & 0 & 4 & 0 & -3 \\ 0 & 1 & 0 & 0 & -2 \\ 0 & 0 & 1 & 0 & -1 \\ 0 & 0 & 0 & 1 & 1 \end{array}\right] \begin{array}{l} \text{I}-4\text{III} \\ \\ \\ \\ \end{array} \sim \left[\begin{array}{cccc|c} 1 & 0 & 0 & 0 & 1 \\ 0 & 1 & 0 & 0 & -2 \\ 0 & 0 & 1 & 0 & -1 \\ 0 & 0 & 0 & 1 & 1 \end{array}\right]$$

$x = 1$

$y = -2$

$z = -1$

$t = 1$

$5 \cdot 1 + 4 \cdot (-1) + 2 \cdot 1 = 3$

$3 = 3$ ✓

$1 - (-2) + 2 \cdot (-1) + 1 = 1$

$2 = 1$ ←

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IME I PREZIME: SEBASTIJAN KOŠTA **BROJ INDEKSA:**

ZAOKRUŽITI AKO ŽELITE: ustmeni kod prof. Uglešića

POPUNJAVA NASTAVNIK
Broj ↓ bodova

1. Među kompleksnim brojevima odrediti rješenja jednadžbe $z^3 = -(-i)^{843}$. *Prikazati rješenja u kompleksnoj ravnini!* 10+5

2. Riješi sustav Gaussovom metodom i obavezno provjeri rješenje: 10+5

$$\begin{aligned} 5x + 4z + 2t &= 3 \\ x - y + 2z + t &= 1 \\ 4x + y + 2z &= 1 \\ x + y + z + t &= 0 \end{aligned}$$

3. Odrediti kada je $\dfrac{x+1}{\sqrt{x^2 - x}} - 1 > 0$. Obavezno uvrštavanjem provjeriti rješenje jednadžbi koje se javljaju tokom rješavanja nejednadžbe. 13+2

4. Za funkciju: $f(x) = \sqrt{x^2 + 4x + 5}$ treba:

   (a) pronaći drugu derivaciju 10

   (b) na temelju ispitivanja toka funkcije skicirati graf 20(graf)

5. Odrediti i provjeriti rješenje $\lim\limits_{x \to +\infty} \left(\dfrac{n}{n-4}\right)^n =$ 8+2

6. Riješiti jednadžbu $\log_{10} x = \arctan x$ grafičkom metodom. *Provjeriti uvrštavanjem!* 10+5

Ukupno: 0

2.

$$\left[\begin{array}{cccc|c} 5 & 0 & 4 & 2 & 3 \\ 1 & -1 & 2 & 1 & 1 \\ 4 & 1 & 2 & 0 & 1 \\ 1 & 1 & 1 & 1 & 0 \end{array}\right] \sim \left[\begin{array}{cccc|c} 1 & 1 & 1 & 1 & 0 \\ 1 & -1 & 2 & 1 & 1 \\ 4 & 1 & 2 & 0 & 1 \\ 5 & 0 & 4 & 2 & 3 \end{array}\right] \begin{array}{l} \\ \text{II}R - \text{I}R \\ \text{III}R - 4\text{I}R \\ \text{IV}R - 5\text{I}R \end{array}$$

$$\sim \left[\begin{array}{cccc|c} 1 & 1 & 1 & 1 & 0 \\ 0 & -2 & 1 & 0 & 1 \\ 0 & -3 & -2 & -4 & -1 \\ 0 & -5 & -1 & -3 & 3 \end{array}\right] \text{II}R - \text{III}R \sim \left[\begin{array}{cccc|c} 1 & 1 & 1 & 1 & 0 \\ 0 & 1 & 3 & 4 & 0 \\ & & & & \\ & & & & \\ & & & & \end{array}\right]$$

0

4.

a) $f(x)=\sqrt{x^2+4x+5} = (x^2+4x+5)^{\frac{1}{2}}$

$f'(x)= \frac{1}{2}(x^2+4x+5)^{-\frac{3}{2}} \cdot (2x+4)$ ✗

$f''(x)= -\frac{3}{4}(x^2+4x+5)^{-\frac{5}{2}} \cdot 2x+4 \cdot 2x+4 + 2x \cdot \frac{1}{2}(x^2+4x+5)^{-\frac{3}{2}}$

5) $f(x)=\sqrt{x^2+4x+5}$

$x^2+4x+5 \geq 0$

$x=\frac{-4\pm\sqrt{16-4\cdot1\cdot5}}{2\cdot1}$

$x=\frac{-4\pm\sqrt{16-20}}{2}$

$x=\frac{-4\pm\sqrt{-4}}{2}$

$f(-x)=f(x)$

$f(-x)=\sqrt{(-x)^2+4(-x)+5}=\sqrt{x^2-4x+5}$

NITI PARNA

NITI NEPARNA

5) $\lim_{x\to+\infty}\left(\frac{n}{n-4}\right)^n =$ ✗

MATEMATIKA 1: Ispit se održava sukladno objavljenim pravilima. Na snazi je Pravilnik o stegovnoj odgovornosti studenata. **PIŠITE DVOSTRANO!** Obavezno popuniti sva polja ispod⇊ C7

IME I PREZIME: IVAN VELEMIR **BROJ INDEKSA:** 17-2-0067-2010

ZAOKRUŽITI AKO ŽELITE: (ustmeni kod prof. Uglešića)

POPUNJAVA NASTAVNIK
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Ukupno:

(2.)
$$\left[\begin{array}{cccc|c} 5 & 0 & 4 & 2 & 3 \\ 1 & -1 & 2 & 1 & 1 \\ 4 & 1 & 2 & 0 & 1 \\ 1 & 1 & 1 & 1 & 0 \end{array}\right] \sim \left[\begin{array}{cccc|c} 1 & 4 & -4 & -2 & -1 \\ 1 & -1 & 2 & 1 & 1 \\ 0 & 5 & -6 & -4 & -3 \\ 0 & 2 & -1 & 0 & -1 \end{array}\right]$$

2. r. · (-4) + 1. r
2. r. · (-4) + 3. r.
2. r. · (-1) + 4. r

1. r. · (-1) + 2. r

$$\sim \left[\begin{array}{cccc|c} 1 & 4 & -4 & -2 & -1 \\ 0 & -5 & 6 & 3 & 2 \\ 0 & 5 & -6 & -4 & -3 \\ 0 & 2 & -1 & 0 & -1 \end{array}\right] \sim \left[\begin{array}{cccc|c} 1 & 0 & -2 & -2 & 1 \\ 0 & -5 & 6 & 3 & 2 \\ 0 & 5 & -6 & -4 & -3 \\ 0 & 2 & -1 & 0 & -1 \end{array}\right] \sim \left[\begin{array}{cccc|c} 1 & 0 & -2 & -2 & 1 \\ 0 & -5 & 6 & 3 & 2 \\ 0 & 0 & 0 & -1 & -1 \\ 0 & 2 & -1 & 0 & -1 \end{array}\right] \sim$$

4. r. · (-2) + 1. r.

2. r. + 3. r

1. s. · (-2) + 3. s. 4. s.

$$\left[\begin{array}{cccc|c} 1 & 0 & 0 & 0 & 1 \\ 0 & -5 & 6 & 3 & 2 \\ 0 & 0 & 0 & -1 & -1 \\ 0 & 2 & -1 & 0 & -1 \end{array}\right] \sim \left[\begin{array}{cccc|c} 1 & 0 & 0 & 0 & 1 \\ 0 & -5 & 1 & 3 & 2 \\ 0 & 0 & 0 & -1 & -1 \\ 0 & 2 & 1 & 0 & -1 \end{array}\right] \sim \left[\begin{array}{cccc|c} 1 & 0 & 0 & 0 & 1 \\ 0 & 1 & -5 & 3 & 2 \\ 0 & 0 & 0 & -1 & -1 \\ 0 & 1 & 2 & 0 & -1 \end{array}\right]$$

$2.S. + 3.S$ $\qquad$ $2.S \leftrightarrow 3.S$ $\qquad$ $3.S \leftrightarrow 4.S$

$$\sim \left[\begin{array}{cccc|c} 1 & 0 & 0 & 0 & 1 \\ 0 & 1 & 3 & -5 & 2 \\ 0 & 0 & -1 & 0 & -1 \\ 0 & 1 & 0 & 2 & -1 \end{array}\right] \sim \left[\begin{array}{cccc|c} 1 & 0 & 0 & 0 & 1 \\ 0 & 1 & 3 & -5 & 2 \\ 0 & 0 & 1 & 0 & 1 \\ 0 & 1 & 0 & 2 & -1 \end{array}\right] \sim \left[\begin{array}{cccc|c} 1 & 0 & 0 & 0 & 1 \\ 0 & 1 & 3 & -5 & 2 \\ 0 & 1 & 0 & 2 & -1 \\ 0 & 0 & 1 & 0 & 1 \end{array}\right]$$

$3.Z. : (-1)$ $\qquad$ $4.Z \leftrightarrow 3.Z.$

(5) a) $f(x) = \sqrt{x^2 + 4x + 5}$

$$f'(x) = (x^2 + 4x + 5)^{\frac{1}{2}} \cdot 2x + 4 + 0$$

$$f'(x) = \frac{1}{2}(x^2 + 4x + 5)^{-\frac{1}{2}} \cdot 2x + 4$$