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: RANKO BRKIĆ

BROJ INDEKSA: 171-0091-2011

ZAOKRUŽITI AKO ŽELITE: (ustmeni kod prof. Uglešića)

	POPUNJAVA NASTAVNIK
$\Sigma 5$	Broj ↓ bodova

1. Među kompleksnim brojevima odrediti $\sqrt[3]{\dfrac{4+2i}{4-2i}}$. *Prikazati rješenja u kompleksnoj ravnini!* — 10+5

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

$$\begin{array}{rcrcrcrcl} 4x & - & y & + & z & + & 2u & = & 14 \\ 2x & + & y & & & - & 3u & = & 2 \\ x & - & y & + & 2z & + & u & = & 3 \\ 2x & + & y & + & z & - & 4u & = & 0 \end{array}$$

3. Odrediti kada je $\dfrac{x+1}{\sqrt{x^2-x}} + 1 > 0$ i obavezno provjeriti rješenje. — 13+2

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

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

6. Riješiti jednadžbu $\arccos x = e^x$ grafičkom metodom. *Provjeriti uvrštavanjem!* — 10+5

Ukupno: 33

(2.) $4x - y + z + 2u = 14$
$2x + y - 3u = 2$
$x - y + 2z + u = 3$
$2x + y + z - 4u = 0$

$$\left[\begin{array}{cccc|c} 4 & -1 & 1 & 2 & 14 \\ 2 & 1 & 0 & -3 & 2 \\ 1 & -1 & 2 & 1 & 3 \\ 2 & 1 & 1 & -4 & 0 \end{array}\right] \leftrightarrow = \left[\begin{array}{cccc|c} 1 & -1 & 2 & 1 & 3 \\ 2 & 1 & 0 & -3 & 2 \\ 4 & -1 & 1 & 2 & 14 \\ 2 & 1 & 1 & -4 & 0 \end{array}\right] \begin{array}{l} R2-2R1 \\ R3-4R1 \\ R4-2R1 \end{array}$$

PROVJERA $3 - 2 + 2\cdot 0 + 2 = 3$
$1 + 2 = 3$ $\quad 3 = 3$ ✓

$$\left[\begin{array}{cccc|c} 1 & -1 & 2 & 1 & 3 \\ 0 & 3 & -4 & -5 & -4 \\ 0 & 3 & -7 & -2 & 2 \\ 0 & 3 & -3 & -6 & -6 \end{array}\right] :3 = \left[\begin{array}{cccc|c} 1 & -1 & 2 & 1 & 3 \\ 0 & 1 & -1 & -2 & -2 \\ 0 & 3 & -7 & -2 & 2 \\ 0 & 3 & 4 & -5 & -4 \end{array}\right] \begin{array}{l} R_1+R_2 \\ -3R2 \\ -3R2 \end{array} = \left[\begin{array}{cccc|c} 1 & 0 & 1 & -1 & 1 \\ 0 & 1 & -1 & -2 & -2 \\ 0 & 0 & -4 & 4 & 8 \\ 0 & 0 & 7 & 1 & 2 \end{array}\right] :(-4) = \left[\right.$$

$$\left[\begin{array}{cccc|c} 1 & 0 & 1 & -1 & 1 \\ 0 & 1 & -1 & -2 & -2 \\ 0 & 0 & 1 & -1 & 2 \\ 0 & 0 & 2 & 1 & 2 \end{array}\right] \begin{array}{l} R1-R3 \\ +R3 \\ \\ R4-2R3 \end{array} = \left[\begin{array}{cccc|c} 1 & 0 & 0 & 0 & 3 \\ 0 & 1 & 0 & -3 & -4 \\ 0 & 0 & 1 & -1 & -2 \\ 0 & 0 & 0 & 8 & 16 \end{array}\right] \begin{array}{l} R2+3R4 \\ R3+R4 \\ :8 \end{array} \left[\begin{array}{cccc|c} 1 & 0 & 0 & 0 & 3 \\ 0 & 1 & 0 & 0 & 2 \\ 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 & 2 \end{array}\right]$$

$x = 3$
$y = 2$
$z = 0$
$u = 2$

VIDI RADOVČIĆ →

PROVJERA: $2\cdot 3 + 2 + 0 - 4\cdot 2 = 0$ ✓
$4\cdot 3 - 2 + 0 + 2\cdot 2 = 14$ ✓
$2\cdot 3 + 2 - 3\cdot 2 = 2$

① $\sqrt[3]{\frac{4+2i}{4-2i}}$

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

$\frac{4+2i}{4-2i} \cdot \frac{4+2i}{4+2i} = \frac{16+8i+8i-4}{16+4} = \frac{12+16i}{12} = 1 + \frac{4}{3}i$ ✓

$Re = 1$ ✓

$Im = \frac{4}{3}$ ✓

$r = \sqrt{1^2 + \frac{4^2}{3}}$

$r = \sqrt{1 + \frac{16}{9}}$

$r = \sqrt{\frac{25}{9}}$ ✓

$r = \frac{5}{3}$ ✓

④ $\sqrt{x^2+4x+2} =$

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

$x_{1,2} = \frac{-4 \pm \sqrt{16-8}}{2}$

$x_{1,2} = \frac{-4 \pm \sqrt{8}}{2}$

$x_{1,2} = \frac{-4 \pm 2.83}{2}$

$x_1 = -3.42$

$x_2 = -0.59$

a) $\sqrt{x^2+4x+2}$

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

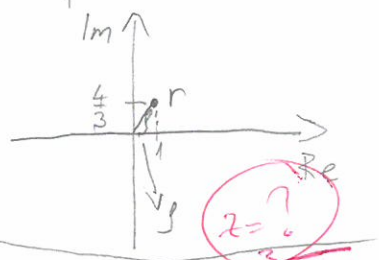
$f'(x) = \frac{2x+4}{2 \cdot \sqrt{x^2+4x+2}}$ ✓

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

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

$\mathbb{D}(f) = \langle -\infty, -3.42 \rangle \cup [-0.59, +\infty\rangle$

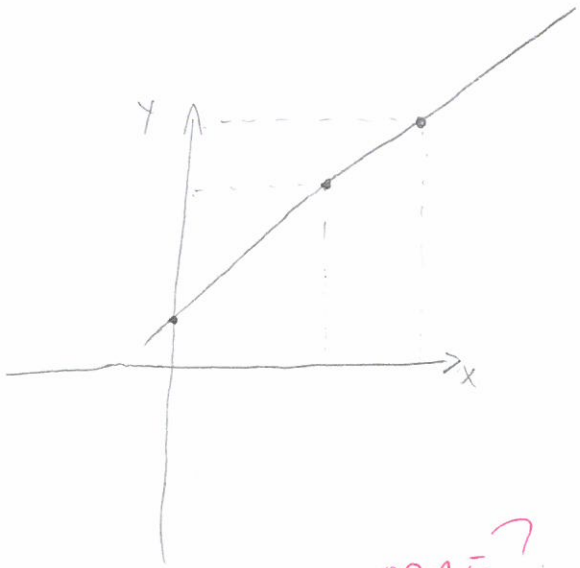
$\tan\varphi = \frac{\frac{4}{3}}{1} = 0.93$



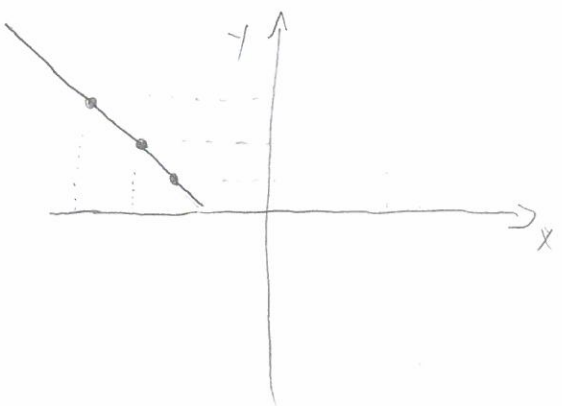
$z = \sqrt[3]{1 + \frac{4}{3}i}$

b)

x	y
0	-1.41
3	4.8
5	6.85



x	y
-4	1.41
-5	2.65
-6	3.75



GRAF ?

Ime i prezime: RANKO BRKIĆ **Broj indeksa:** 17-1-0091-2011

⑤ $\lim_{n\to+\infty}\left(1-\frac{2}{n}\right)^n = \lim_{n\to+\infty}\left(1+\frac{1}{\frac{n}{2}}\right)^{-\frac{n}{2}\cdot(-2)} = \left(\lim_{-\frac{n}{2}\to+\infty}\left(1+\frac{1}{\frac{n}{2}}\right)^{-\frac{n}{2}}\right)^{\lim_{n\to+\infty}-2} = e^{-2}$ ✓

PROVJERA?

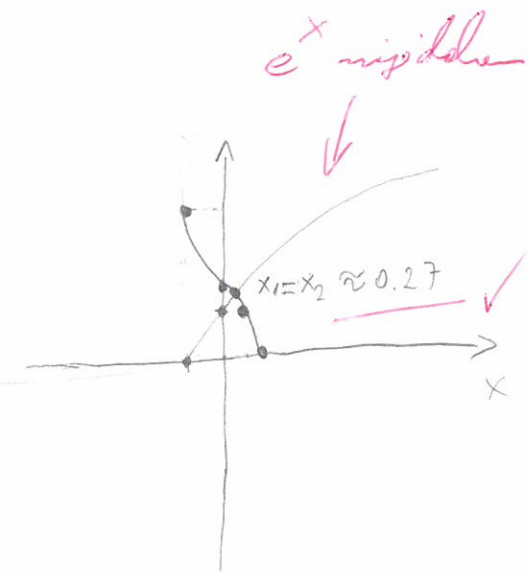
⑥ $\arccos x = e^x$

$f(x) = \arccos x$

$g(x) = e^x$

$f(x)$	
x	y
0	1.57
1	0
-1	3.14
0.27	1.3 ✓

$g(x)$	
x	y
0	1
1	2.72
-1	0.37
0.27	1.3 ✓



③ $\frac{x+1}{\sqrt{x^2-x}} + 1 > 0$

$x^2 - x > 0$

$x^2 > x$

$x > 1$

$x + 1 > 0$

$x > -1$

✗

$\mathbb{D}\, f(x) > 0 \langle 1, +\infty \rangle$

MATEMATIKA 1: Ispit se održava sukladno objavljenim pravilima. Na snazi je Pravilnik o stegovnoj odgovornosti studenata. **PIŠITE DVOSTRANO!** Obavezno popuniti sva polja ispod⇊ $\mathcal{E}5$

IME I PREZIME: Rikardo Radovčić **BROJ INDEKSA:** 17-2-0228-2012

ZAOKRUŽITI AKO ŽELITE: ustmeni kod prof. Uglešića

POPUNJAVA NASTAVNIK
Broj ↓ bodova

1. Među kompleksnim brojevima odrediti $\sqrt[3]{\frac{4+2i}{4-2i}}$. *Prikazati rješenja u kompleksnoj ravnini!* 10+5

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

$$\begin{array}{rcrcrcl} 4x & - & y & + & z & + & 2u = & 14 \\ 2x & + & y & & & - & 3u = & 2 \\ x & - & y & + & 2z & + & u = & 3 \\ 2x & + & y & + & z & - & 4u = & 0 \end{array}$$

3. Odrediti kada je $\frac{x+1}{\sqrt{x^2-x}} + 1 > 0$ i obavezno provjeriti rješenje. 13+2

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

   (a) pronaći drugu derivaciju 10

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

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

6. Riješiti jednadžbu $\arccos x = e^x$ grafičkom metodom. *Provjeriti uvrštavanjem!* 10+5

Ukupno: 28

(2)

$$\left[\begin{array}{cccc|c} 4 & -1 & 1 & 2 & 14 \\ 2 & 1 & 0 & -3 & 2 \\ 1 & -1 & 2 & 1 & 3 \\ 2 & 1 & 1 & -4 & 0 \end{array}\right] \sim \left[\begin{array}{cccc|c} 1 & -1 & 2 & 1 & 3 \\ 2 & 1 & 0 & -3 & 2 \\ 4 & -1 & 1 & 2 & 14 \\ 2 & 1 & 1 & -4 & 0 \end{array}\right] \sim \left[\begin{array}{cccc|c} 1 & -1 & 2 & 1 & 3 \\ 0 & 3 & -4 & -1 & 6 \\ 0 & 3 & -7 & -2 & 2 \\ 0 & 3 & -3 & -6 & -6 \end{array}\right] \sim$$

$$\sim \left[\begin{array}{cccc|c} 1 & -1 & 2 & 1 & 3 \\ 0 & 1 & -\frac{4}{3} & -\frac{1}{3} & 2 \\ 0 & 3 & -7 & -2 & 2 \\ 0 & 3 & -3 & -6 & -6 \end{array}\right] \sim \left[\begin{array}{cccc|c} 1 & 0 & \frac{2}{3} & -\frac{1}{3} & 5 \\ 0 & 1 & -\frac{4}{3} & -\frac{4}{3} & 2 \\ 0 & 0 & -3 & 2 & -4 \\ 0 & 0 & 1 & -2 & 12 \end{array}\right] \sim$$

$$\sim \left[\begin{array}{cccc|c} 1 & 0 & \frac{2}{3} & -\frac{1}{3} & 5 \\ 0 & 1 & -\frac{4}{3} & -\frac{4}{3} & 2 \\ 0 & 0 & 1 & -2 & -12 \\ 0 & 0 & -3 & 2 & -4 \end{array}\right] \sim \left[\begin{array}{cccc|c} 1 & 0 & 0 & 1 & 13 \\ 0 & 1 & 0 & -4 & -14 \\ 0 & 0 & 1 & -2 & -12 \\ 0 & 0 & 0 & -4 & -10 \end{array}\right] \sim \left[\begin{array}{cccc|c} 1 & 0 & 0 & 0 & 3 \\ 0 & 1 & 0 & 0 & 26 \\ 0 & 0 & 1 & 0 & 8 \\ 0 & 0 & 0 & 1 & 10 \end{array}\right]$$

$x = 3$

$y = 26$

$z = 8$

$u = 10$

Provjera ⟹

Provjera:

$4x - y + z + 2u = 14$

$12 - 26 + 8 + 20 = 14$

$-14 + 28 = 14$

$14 = 14$ //

$2x + y - 3u = 2$

$6 + 26 - 30 = 2$

$2 = 2$ //

$x - y + 2z + u = 3$

$-23 + 26 = 3$

$3 = 3$ //

$2x + y + z - 4u = 0$

$6 + 26 + 8 - 40 = 0$

$40 = 40$ //

5

VIDI ZADNJU STRANU.

Rikardo Radovčić

IME I PREZIME: **BROJ INDEKSA:**

① $\sqrt[3]{\frac{4+2i}{4-2i}} = \sqrt[3]{\frac{4+2i}{4-2i}\cdot\frac{4+2i}{4+2i}} = \sqrt[3]{\frac{16+12i+4}{16+4}} = \sqrt[3]{\frac{20+12i}{20}}$

$z = \frac{20}{20} + \frac{12}{20}i$

$z = 1 + \frac{12}{20}i$

$|z| = \sqrt{1+\frac{144}{20^2}}$

$|z| = \sqrt{\frac{1+144}{20^2}} = \sqrt{\frac{145}{20^2}} = \sqrt{\frac{145}{400}} = 0.60 = r$ ×

$\cos\varphi \frac{x}{r} = 1$

$\sin\varphi \quad \frac{y}{r} = \frac{12}{20}$ $\quad \varphi \approx 36°87'$ sin i cos su pozitivni u prvom kvadrantu

$\sqrt[3]{z} = \sqrt[3]{r}\left(\cos\frac{\varphi+2k\pi}{3} + i\sin\frac{\varphi+2k\pi}{3}\right), k = 0,1,2$

$k=0 \quad z_1 = \cos\varphi + i\sin\varphi$

$k=1 \quad z_2 = \cos + i\sin$

$k=2 \quad z_3 = \cos + i\sin$

⑤ $f(x) = \sqrt{x^2+4x+2}$

-a- pronaći derivaciju

-b- na temelju ispitivanja toka funkcije skicirati graf

-a-

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

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

~~X~~

(5) $\lim_{x\to+\infty}\left(\frac{n-2}{n}\right)^n = \lim_{n\to\pm\infty}\left(\frac{n}{n}+\frac{-2}{n}\right)$

$= \lim_{n\to\infty}\left(1+\frac{-2}{n}\right)^n = \lim_{n\to\infty}\left(1+\frac{\frac{1}{n}}{\frac{n}{-2}}\right)^n$

$= \lim_{n\to\infty}\left(\left(1+\frac{1}{\frac{n}{-2}}\right)^{\frac{n}{-2}}\right)^{-2} = e^{-2} = \frac{1}{e^2}$ ✓ PROVJERA?

(6) $\arccos x = e^x$

$f(x) = \arccos x \quad g(x) = e^x$

$f(-1) = \pi$

$f(0) = \frac{\pi}{2}$

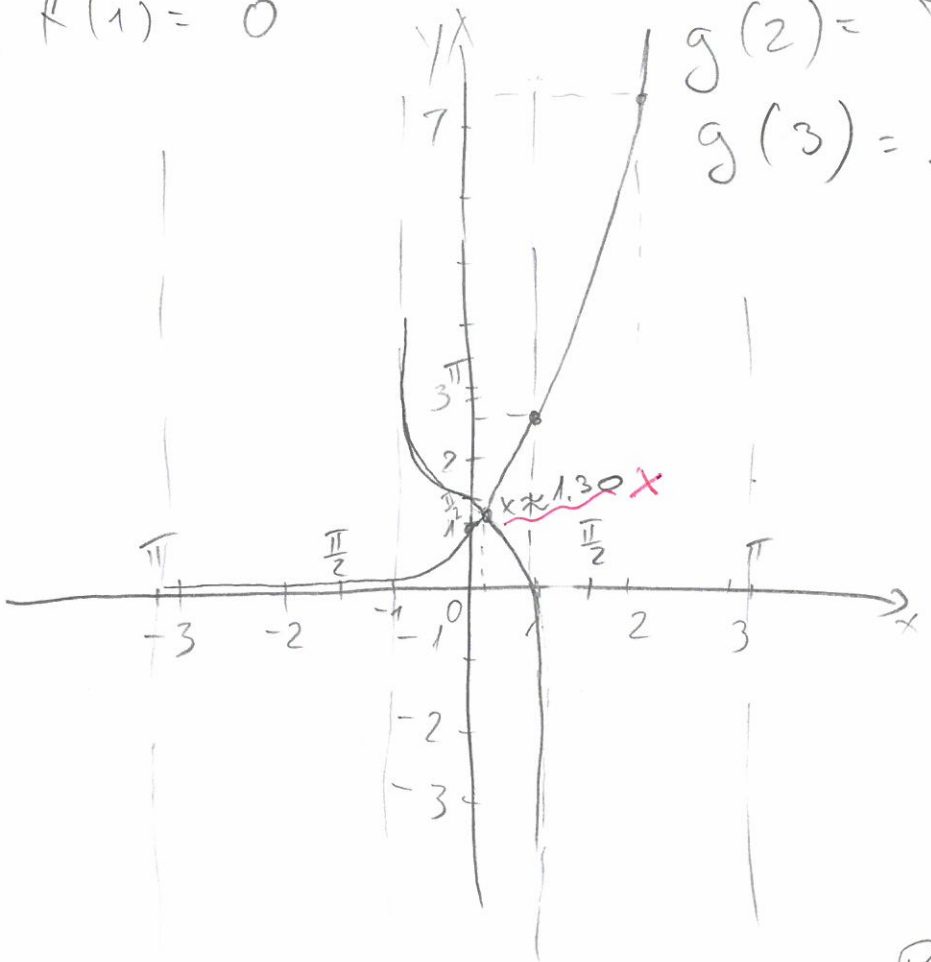
$f(1) = 0$

$g(0) = 1$

$g(1) = 2.71$

$g(2) = 7.39$

$g(3) = 20,09$



Provjera:

$x \approx 0.27$ ✓

$\arccos 0,27 = e^{0,27}$

$1.30 = 1,30$

Rikardo Radovčić

IME I PREZIME: BROJ INDEKSA:

③ $\frac{x+1}{\sqrt{x^2+x}} + 1 > 0$

$x^2 - x \geq 0$

$x(x-1) \geq 0$ ✗

$x_1 = 0$

$x_2 - 1 > 0$?

$x_2 > 1$

$$\left[\begin{array}{cccc|c} 4 & -1 & 1 & 2 & 14 \\ 2 & 1 & 0 & -3 & 2 \\ 1 & -1 & 2 & 1 & 3 \\ 2 & 1 & 1 & -4 & 0 \end{array}\right] \sim \left[\begin{array}{cccc|c} 1 & -1 & 2 & 1 & 3 \\ 2 & 1 & 0 & -3 & 2 \\ 4 & -1 & 1 & 2 & 14 \\ 2 & 1 & 1 & -4 & 0 \end{array}\right] \begin{array}{l} \\ R2-2R1 \\ R3-4R1 \\ R4-2R1 \end{array} \sim \left[\begin{array}{cccc|c} 1 & -1 & 2 & 1 & 3 \\ 0 & 3 & -4 & -5 & -4 \\ 0 & 3 & -7 & -2 & 2 \\ 0 & 3 & -3 & -6 & -6 \end{array}\right] \begin{array}{l} \\ \\ R3-R2 \\ R4-R2 \end{array}$$

$$\sim \left[\begin{array}{cccc|c} 1 & -1 & 2 & 1 & 3 \\ 0 & 3 & -4 & -5 & -4 \\ 0 & 0 & -3 & 3 & 6 \\ 0 & 0 & 1 & -1 & -2 \end{array}\right] \sim \left[\begin{array}{cccc|c} 1 & -1 & 2 & 1 & 3 \\ 0 & 3 & -4 & -5 & -4 \\ 0 & 0 & 1 & -1 & -2 \\ 0 & 0 & -3 & 3 & 6 \end{array}\right] R4+3R3 \sim \left[\begin{array}{cccc|c} 1 & -1 & 2 & 1 & 3 \\ 0 & 3 & -4 & -5 & -4 \\ 0 & 0 & 1 & -1 & -2 \\ 0 & 0 & 0 & 0 & 0 \end{array}\right] \begin{array}{l} R1-2R3 \\ R2+4R3 \\ \\ \checkmark \end{array}$$

$$\sim \left[\begin{array}{cccc|c} 1 & -1 & 0 & 3 & 7 \\ 0 & 3 & 0 & -9 & -12 \\ 0 & 0 & 1 & -1 & -2 \\ 0 & 0 & 0 & 0 & 0 \end{array}\right] \cdot \frac{1}{3} \sim \left[\begin{array}{cccc|c} 1 & -1 & 0 & 3 & 7 \\ 0 & 1 & 0 & -3 & -4 \\ 0 & 0 & 1 & -1 & -2 \end{array}\right] R1+R2 \sim \left[\begin{array}{cccc|c} x & y & z & u & \\ 1 & 0 & 0 & 0 & 3 \\ 0 & 1 & 0 & -3 & -4 \\ 0 & 0 & 1 & -1 & -2 \end{array}\right]$$

$$\Rightarrow \left\{\begin{array}{l} x = 3 \\ y - 3u = -4 \\ z - u = -2 \end{array}\right\} \Rightarrow \left\{\begin{array}{l} x = 3 \\ y = -4 + 3\lambda \\ z = -2 + \lambda \\ u = \lambda \end{array}\right. \quad \lambda \in \mathbb{R} \Rightarrow \begin{bmatrix} x \\ y \\ z \\ u \end{bmatrix} = \begin{bmatrix} 3 \\ -4 \\ -2 \\ 0 \end{bmatrix} + \lambda \begin{bmatrix} 0 \\ 3 \\ 1 \\ 1 \end{bmatrix}$$

BESKONAČNO RJEŠENJA

NPR. za $\lambda = 2 \Rightarrow \begin{bmatrix} x \\ y \\ z \\ u \end{bmatrix} = \begin{bmatrix} 3 \\ 2 \\ 0 \\ 2 \end{bmatrix}$

NPR. za $\lambda = 10 \Rightarrow \begin{bmatrix} x \\ y \\ z \\ u \end{bmatrix} = \begin{bmatrix} 3 \\ 26 \\ 8 \\ 10 \end{bmatrix}$

TODO: PROVJERI OVA RJEŠENJA UVRŠTAVANJEM

MATEMATIKA 1: Ispit se održava sukladno objavljenim pravilima. Na snazi je Pravilnik o stegovnoj odgovornosti studenata. **PIŠITE DVOSTRANO!** Obavezno popuniti sva polja ispod⇓⇓ $\mathcal{E}5$

IME I PREZIME: MARTIN SOSA **BROJ INDEKSA:** 17-1-0057-2011

ZAOKRUŽITI AKO ŽELITE: ustmeni kod prof. Uglešića

POPUNJAVA NASTAVNIK
Broj ↓ bodova

1. Među kompleksnim brojevima odrediti $\sqrt[3]{\frac{4+2i}{4-2i}}$. *Prikazati rješenja u kompleksnoj ravnini!* 10+5

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

$$\begin{array}{rcrcrcr} 4x & - & y & + & z & + & 2u = & 14 \\ 2x & + & y & & & - & 3u = & 2 \\ x & - & y & + & 2z & + & u = & 3 \\ 2x & + & y & + & z & - & 4u = & 0 \end{array}$$

3. Odrediti kada je $\frac{x+1}{\sqrt{x^2-x}} + 1 > 0$ i obavezno provjeriti rješenje. 13+2

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

   (a) pronaći drugu derivaciju 10

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

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

6. Riješiti jednadžbu $\arccos x = e^x$ grafičkom metodom. *Provjeriti uvrštavanjem!* 10+5

Ukupno: 0

1. $4x - y + z + 2u = 14$
$2x + y - 3u = 2$
$x - y + 2z + u = 3$
$2x + y + z - 4u = 0$

$$\sim \left[\begin{array}{cccc|c} 4 & -1 & 2 & 2 & 14 \\ 2 & 1 & 0 & -3 & 2 \\ 1 & -1 & 2 & 1 & 3 \\ 2 & 1 & 1 & -4 & 0 \end{array}\right] : 4 \sim$$

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

R1·1-R2
R1-R3
R1·2-R4

$$\left[\begin{array}{cccc|c} 1 & -\frac{1}{4} & \frac{1}{2} & \frac{1}{2} & 1 \\ 0 & 1 & \frac{2}{3} & \frac{8}{3} & 0 \\ 0 & -\frac{5}{4} & -\frac{5}{2} & -\frac{1}{2} & -2 \\ 0 & -\frac{3}{2} & 0 & -5 & 2 \end{array}\right] \sim \left[\begin{array}{cccc|c} 1 & 0 & \frac{7}{3} & \frac{7}{6} & 1 \\ 0 & 1 & \frac{2}{3} & \frac{8}{3} & 0 \\ 0 & 0 & -\frac{2}{3} & \frac{17}{6} & -2 \\ 0 & 0 & 1 & -1 & 2 \end{array}\right] \cdot\left(-\frac{3}{2}\right) \sim$$

R2·$\frac{1}{4}$+R1=
R2·$\frac{5}{4}$+R3
R2·$\frac{3}{2}$+R4

$$\sim \left[\begin{array}{cccc|c} 1 & 0 & \frac{2}{5} & \frac{7}{6} & 1 \\ 0 & 1 & \frac{2}{5} & \frac{8}{3} & 0 \\ 0 & 0 & 1 & -\frac{17}{4} & 3 \\ 0 & 0 & 1 & -1 & 2 \end{array}\right] \begin{array}{l} R3\cdot\left(-\frac{2}{5}\right)+R1 \\ R3\cdot\left(-\frac{2}{5}\right)+R2 \\ R3-R4 \end{array} \sim \left[\begin{array}{cccc|c} 1 & 0 & 0 & 4 & -1 \\ 0 & 1 & 0 & \frac{11}{2} & -2 \\ 0 & 0 & 1 & -\frac{17}{4} & 3 \\ 0 & 0 & 0 & -\frac{13}{4} & 1 \end{array}\right] \cdot\left(-\frac{4}{13}\right) \sim$$

$$\sim \left[\begin{array}{cccc|c} 1 & 0 & 0 & 4 & -1 \\ 0 & 1 & 0 & \frac{11}{2} & -2 \\ 0 & 0 & 1 & -\frac{17}{4} & 3 \\ 0 & 0 & 0 & 1 & -\frac{4}{13} \end{array}\right] \begin{array}{l} R4\cdot 4-R1 \\ R4\cdot\frac{11}{2}-R2 \\ R4\cdot\frac{17}{4}+R3 \end{array} \sim \left[\begin{array}{cccc|c} 1 & 0 & 0 & 0 & -\frac{4}{13} \\ 0 & 1 & 0 & 0 & \frac{9}{13} \\ 0 & 0 & 1 & 0 & \frac{22}{13} \\ 0 & 0 & 0 & 1 & -\frac{4}{13} \end{array}\right]$$

$$x = -\frac{3}{13}$$

$$y = \frac{43}{13}$$

$$z = \frac{22}{13}$$

$$u = -\frac{4}{13}$$

$$4x - y + z + 2u = 14$$

$$4\cdot\left(-\frac{3}{13}\right) - \frac{43}{13} + \frac{22}{13} + 2\cdot\left(-\frac{4}{13}\right) = 14$$

$$-\frac{12}{13} - \frac{43}{13} + \frac{22}{13} + \left(-\frac{8}{13}\right) = 14$$

NE

$$2x + y - 3u = 2$$

$$2\left(-\frac{3}{13}\right) + \frac{43}{13} - 3\left(-\frac{4}{13}\right) = 2$$

VIDI RADOVČIĆ

MATEMATIKA 1: Ispit se održava sukladno objavljenim pravilima. Na snazi je Pravilnik o stegovnoj odgovornosti studenata. **PIŠITE DVOSTRANO!** Obavezno popuniti sva polja ispod⇊ $\mathcal{E}5$

IME I PREZIME: Tadeja Uhoda **BROJ INDEKSA:** 17-2-0106-2011

ZAOKRUŽITI AKO ŽELITE: ustmeni kod prof. Uglešića

POPUNJAVA NASTAVNIK
Broj ↓ bodova

1. Među kompleksnim brojevima odrediti $\sqrt[3]{\frac{4+2i}{4-2i}}$. *Prikazati rješenja u kompleksnoj ravnini!* 10+5

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

$$\begin{array}{rcrcrcrl} 4x & - & y & + & z & + & 2u = & 14 \\ 2x & + & y & & & - & 3u = & 2 \\ x & - & y & + & 2z & + & u = & 3 \\ 2x & + & y & + & z & - & 4u = & 0 \end{array}$$

3. Odrediti kada je $\frac{x+1}{\sqrt{x^2-x}} + 1 > 0$ i obavezno provjeriti rješenje. 13+2

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

   (a) pronaći drugu derivaciju 10

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

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

6. Riješiti jednadžbu $\arccos x = e^x$ grafičkom metodom. *Provjeriti uvrštavanjem!* 10+5

Ukupno:

2. $4x - y + z + 2u = 14$
$2x + y - 3u = 2$
$x - y + 2z + u = 3$
$2x + y + z - 4u = 0$

$$\left|\begin{array}{cccc|c} 4 & -1 & 1 & 2 & 14 \\ 2 & 1 & 0 & -3 & 2 \\ 1 & -1 & 2 & 1 & 3 \\ 2 & 1 & 1 & -4 & 0 \end{array}\right| \cdots \times$$