MATEMATIKA 2: Ispit se održava sukladno objavljenim pravilima. Na snazi je Pravilnik o stegovnoj odgovornosti studenata. **PIŠITE DVOSTRANO!** xii

IME I PREZIME: MARIN MATEK **BROJ INDEKSA:** 17-1-0111-12

POPUNJAVA NASTAVNIK
Broj ↓ bodova

1. Riješiti $y'' - y = -x + 1$ i odrediti posebno rješenje koje udovoljava početnom uvjetu $x = 0$, $y = 0$, $y' = 0$. 20
2. Provjeriti da funkcija $f(x) = xe^x$ zadovoljava diferencijalnu jednadžbu $y'' - 2y' + y = 0$ i početne uvjete $y(0) = 0$ i $y'(0) = 1$. 15
3. Skicirati razinske krivulje funkcije $f(x,y) = \frac{1}{1+x^2+y^2}$. 15
4. Numeričkom integracijom odrediti vrijednost $\int_1^2 \frac{e^x}{x} dx$. (bodovanje: 20 za rel. grešku $\leq 3\%$, 15 za rel. grešku $\lessapprox 6\%$, 8 za rel. grešku $\lessapprox 10\%$) 20
5. $$\int_0^{\pi} \frac{dx}{2\sin x - \cos x + 5} = ?$$ 15
6. Integriranjem izračunati površinu trokuta zadanog točkama $A(0,0)$, $B(-2,2)$, $C(-1,-1)$. 15

Ukupno: 20

f	$\frac{df}{dx}$
x^α $(\alpha \neq 0)$	$\alpha x^{\alpha-1}$
$\ln x$	$\frac{1}{x}$
$\log_\alpha x$ $(\alpha > 0)$	$\frac{1}{x \ln \alpha}$
e^x	e^x
α^x $(\alpha > 0)$	$\alpha^x \ln \alpha$
$\sin x$	$\cos x$
$\cos x$	$-\sin x$
$\tan x$	$\frac{1}{\cos^2 x}$
$\cot x$	$\frac{-1}{\sin^2 x}$
$\arcsin x$	$\frac{1}{\sqrt{1-x^2}}$
$\arctan x$	$\frac{1}{1+x^2}$

Tablica nekih integrala

$\int dx = x + C$	$\int \frac{dx}{a^2+x^2} = \frac{1}{a} \arctan \frac{x}{a} + C$	$\int \frac{dx}{a^2-x^2} = \frac{1}{2a} \ln \left\lvert \frac{a+x}{a-x} \right\rvert + C$
$\int x^\alpha dx = \frac{x^{\alpha+1}}{\alpha+1}$, $\alpha \neq -1$	$\int \tan x \, dx = -\ln\lvert\cos x\rvert + C$	$\int \frac{dx}{x^2-a^2} = \frac{1}{2a} \ln \left\lvert \frac{x-a}{x+a} \right\rvert + C$
$\int \frac{dx}{x} = \ln\lvert x\rvert + C$	$\int \cot x \, dx = \ln\lvert\sin x\rvert + C$	$\int \frac{dx}{\sqrt{x^2 \pm a^2}} = \ln\left\lvert x + \sqrt{x^2 \pm a^2}\right\rvert + C$
$\int e^x dx = e^x + C$	$\int \frac{dx}{\cos^2 x} = \tan x + C$	$\int \frac{dx}{\sqrt{a^2-x^2}} = \arcsin \frac{x}{a} + C$
$\int a^x dx = \frac{a^x}{\ln a} + C$	$\int \frac{dx}{\sin^2 x} = -\cot x + C$	$\int \frac{dx}{\sqrt{2ax-x^2}} = \arccos\left(1 - \frac{x}{a}\right) + C$
$\int \sin x \, dx = -\cos x + C$	$\int \sqrt{x^2 \pm a^2} \, dx = \frac{1}{2}\left[x\sqrt{x^2 \pm a^2} \pm a^2 \ln\left(x + \sqrt{x^2 \pm a^2}\right)\right] + C$	
$\int \cos x \, dx = \sin x + C$	$\int \sqrt{a^2-x^2} \, dx = \frac{1}{2}\left[x\sqrt{a^2-x^2} + a^2 \arcsin\left(\frac{x}{a}\right)\right] + C$	

3. $f(x,y) = \frac{1}{1+x^2+y^2}$ $\quad 1+x^2+y^2 \neq 0$

$C = 2$ $\quad x^2 \neq -y^2 - 1$

$C = 1$

$\frac{1}{1+x^2+y^2} = 2 \quad / \sqrt{\ }$

$C = 4$

$\frac{1}{1+x^2+y^2} = 1 \quad / \sqrt{\ }$

$\frac{1}{1+x+y} = \sqrt{2} \quad / \cdot 1+x+y$

$\frac{1}{1+x^2+y^2} = 4 \quad / \sqrt{\ }$

$\frac{1}{1+x+y} = 1 \quad / \cdot 1+x+y$

$\frac{1}{1+x+y} = 2 \quad / \cdot 1+x+y$

$1 = \sqrt{2} + \sqrt{2}x + \sqrt{2}y$

$1 = 1 + x + y$

$\sqrt{2}x = 1 - \sqrt{2} - \sqrt{2}y$

$1 = 2 + 2x + 2y$

$x = \frac{1-\sqrt{2}-\sqrt{2}y}{\sqrt{2}}$

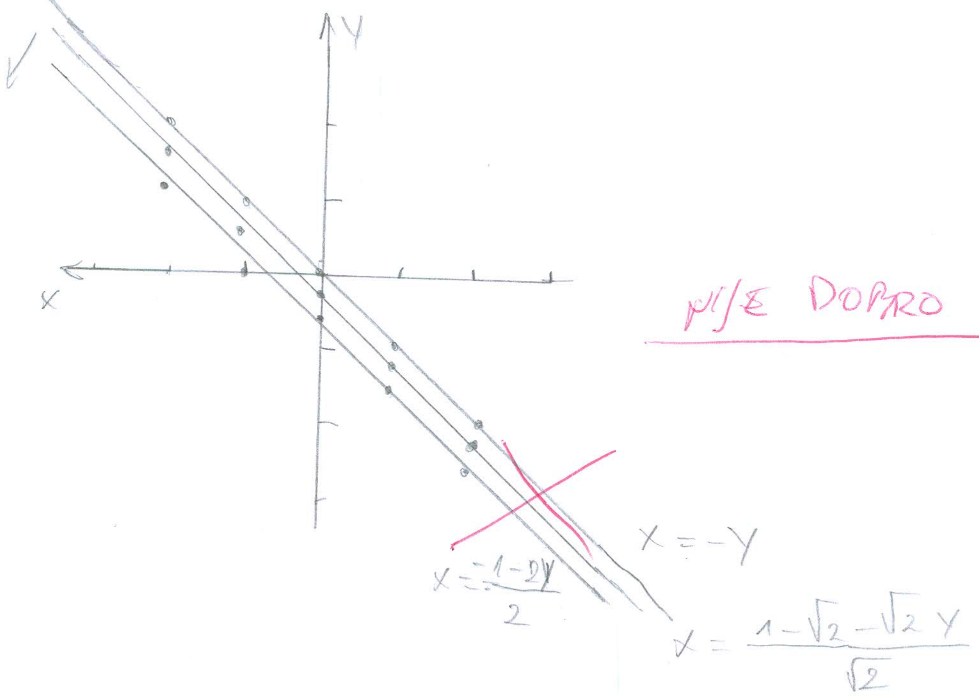
$x = -y$

$x = \frac{-1-2y}{2}$

-2	-1	0	1	2
2	1	0	-1	-2

-2	-1	0	1	2
1,70	0,70	-0,29	-1,29	-2,29

-2	-1	0	1	2
1,5	0	-0,6	-1,5	-2,5



NIJE DOBRO

4. $\int_1^2 \frac{e^x}{x}\,dx$

k	0	1	2
x_k	1	1,5	2
f_k	2,7182	2,98779	3,6945

$\frac{1}{6}\left(2,718281828 + 4 \cdot 2,987792714 + 3,694528049\right)$

$= 3,06066$

20

5. $\int_0^{\pi} \frac{dx}{2\sin x - \cos x + 5}$

k	0	1	2
x_k	0	$\frac{\pi}{2}$	π
f_k	$\frac{1}{4}$	$\frac{1}{7}$	$\frac{1}{6}$

$\frac{\pi}{6}\left(\frac{1}{4} + 4 \cdot \frac{1}{7} + \frac{1}{6}\right)$

$= 0,51736$

0

NE TRAŽI SE ~~AP~~ NUMERIČKA APROKSIMACIJA!

2. $y'' - 2y + y = 0$

$y(x) = c_1 e^{2x} + c_2 x e^{2x}$

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

$y'(x) = 2c_1 e^{2x} + c_2 e^{2x} + 2c_2 x e^{2x}$

$r_1 = r_2 = 2$

$y'(0) = 1$ $\qquad$ $y(0) = 0$

$1 = 2c_1 e^{2\cdot 0} + c_2 e^{2\cdot 0} + 2c_2 \cdot 0 e^{2\cdot 0}$ $\qquad$ $0 = c_1 e^{2\cdot 0} + c_2 0 e^{2\cdot 0}$

$0 = c_1$

$1 = 2c_1 + c_2$

OVO NIJE PROVJERA. 0

$-c_2 = 2c_1 - 1 \quad / \cdot (-1)$

$c_2 = -2c_1 + 1$

$c_2 = 1$

1. $y'' - y = -x + 1$

$y'' - y = 0$

$r^2 - 1 = 0$

$r = \pm 1$

$y_H(x) = c_1 e^{x} + c_2 e^{-x}$

$-x = e^{\alpha x}(P_m(x)\cos(\beta x) + \cancel{Q_m(x)\sin}(\beta x))$

$\alpha = 0$ $\qquad$ $N = \max\{1, N/P\}$ $\qquad$ $z = 0 + 0i = 0$

$\beta = 0$ $\qquad$ $= 1$ $\qquad$ $z = 0$

$P_m = -x \quad m = 1$

$1 = e^{\alpha x}(P_m(x)\cos(\beta x) \cancel{+ Q_m(x)\sin(\beta x)})$

$\alpha = 0$ $\qquad$ $N = \max\{0, N/P\}$ $\qquad$ $z = 0$

$\beta = 0$ $\qquad$ $= 0$

$P_m = 1 \quad m = 0$

MARIN MATEK

$A(\overset{x_1}{0},\overset{y_1}{0})$

$B(\overset{x_1}{-2},\overset{y_1}{2})$

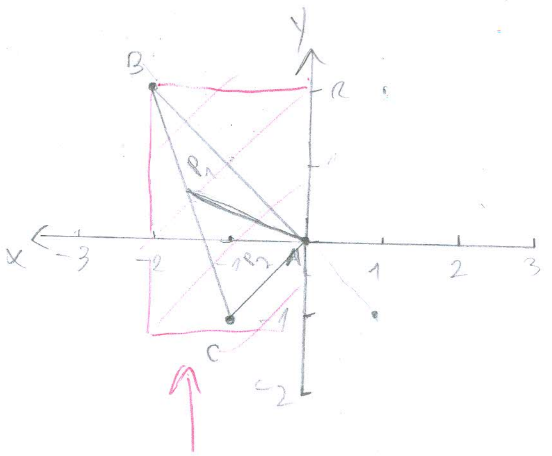
$C(\overset{x_2}{-1},\overset{y_2}{-1})$

$\overline{AB} = y - y_1 = \frac{y_2 - y_1}{x_2 - y_1} \cdot (x - x_1)$

$= y - 0 = \frac{2-0}{-2-0} \cdot (x - 0)$

$= y = -x$

$= x = -y$



$\overline{AC} = y - y_1 = \frac{y_2 - y_1}{x_2 - x_1}(x - x_1)$

$y + 1 = \frac{-1-0}{-1-0}(x - 0)$

$y + 1 = x$

$x = y + 1$

$\overline{BC} = y - y_1 = \frac{y_2 - y_1}{x_2 - y_1}(x - y_1)$

$= y - 2 = \frac{-1-2}{-1+2}(x+2)$

$= y - 2 = -3x - 6$

$3x = -4 - y$

$x = \frac{-4-y}{3}$

$\int_{-2}^{0} P_1 + P_2$

OVAJ PRAVOKUTNIK JE POVRŠINE $P = 6$, PA TROKUT MORA BITI MANJE POVRŠINE

$= \int_{-2}^{0} (x + y + \frac{3}{2}x - \frac{y}{2} - 2) + (x - y - 1 + \frac{3}{2}x - \frac{y}{2} - 2) = \int_{-2}^{0} \frac{5}{2}x + \frac{y}{2} - 2 + \frac{5}{2}x - \frac{3}{2}y - 3$

$= \int_{-2}^{0} 5x - y - 5 = 5\int x\,dx - \int y\,dy - \int 5\,dx = \frac{5x^2}{2} - \frac{y^2}{2} - 5x \Big|_{-2}^{0} = 0 - 13 = 13$ ✗

$\varnothing$

MARIN MATEK

$y_p(x) = x^q \cdot e^{\alpha x} \left(S_n(x) \cos(\beta x) + \cancel{T_n(x) \sin(\beta x)} \right)$

$= Ax + B \qquad y' = A \qquad y'' = 0$

$y_p(x) = x^q e^{\alpha x} \left(S_n(x) \cos(\beta x) + T_n(x) \sin(\beta x) \right)$

$= A \qquad y' = 0 \qquad y'' = 0$

$\emptyset$

KOJE JE RJEŠENJE?

MATEMATIKA 2: Ispit se održava sukladno objavljenim pravilima. Na snazi je Pravilnik o stegovnoj odgovornosti studenata. **PIŠITE DVOSTRANO!** xii

IME I PREZIME: DINO CVITAN **BROJ INDEKSA:** 17-2-0068.

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Broj ↓ bodova

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Ukupno: 0

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$\alpha^x\ (\alpha > 0)$	$\alpha^x \ln \alpha$
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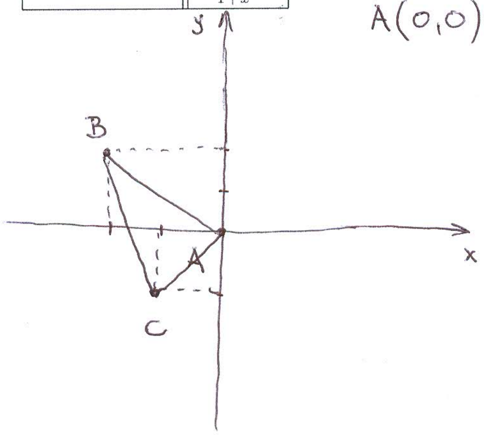
6.



$A(0,0),\ B(\overset{x\ y}{-2,2}),\ C(-1,-1)$

$y - y_1 = \frac{y_2 - y_1}{x_2 - x_1}(x - x_1)$

$A(\overset{x\ y}{0,0})$
$B(\underset{x_2\ y_2}{-2,2})$

$y - 0 = \frac{2-0}{-2-0}(x-0)$

$y - 0 = -1(x-0)$

$y - 0 = -1x$

$y = -1x$

$B(\overset{x_1\ y_1}{-2,2})$
$C(\underset{x_2\ y_2}{-1,-1})$

$y - 2 = \frac{-1-2}{-1+2}(x+2)$

$y - 2 = \frac{-3}{1}(x+2)$

$y - 2 = -3x - 6$

$y = -3x - 4$

$A(\overset{x_1\ y_1}{0,0})$
$C(\underset{x_2\ y_2}{-1,-1})$

$y - 0 = \frac{-1-0}{-1-0}(x-0)$

$y - 0 = 1x$

$y = 1x$

$$P_1 = \int_{-1}^{0} (1x)\,dx + (-1x)\,dx$$

$$= \frac{x^2}{2}\Big|_{-1}^{0} + -\frac{x^2}{2}\Big|_{-1}^{0}$$

$$= \frac{1}{2} + ($$

$$P_1 = \int_{-1}^{0} (1x)\,dx + (-3x-4)\,dx$$

$$= \frac{x^2}{2}\Big|_{-1}^{0} + \left(-3\frac{x^2}{2} - 4x\right|_{-1}^{0}$$

$$= \frac{1}{2} + \left(-\frac{3}{2} + 4\right)$$

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

$$= \frac{6}{2} = 3$$

$$P_2 = \int_0^2 = \ ?$$

3) $f(x,y) = \dfrac{1}{1+x^2+y^2}$ $N \neq 0$

$1+x^2+y^2 \neq 0$

$x^2+y^2 \neq -1$

$r^2 = -1 \,/\sqrt{\ }$

$r = i$

SKICA ?

5. $\displaystyle\int_0^{\pi} \frac{dx}{2\sin x - \cos x + 5} = \int_0^{\pi} \frac{1}{2\sin x}\,dx - \int \frac{1}{\cos x}\,dx + \int 5\,dx$ X

$= -\frac{1}{2}\cos x$

MATEMATIKA 2: Ispit se održava sukladno objavljenim pravilima. Na snazi je Pravilnik o stegovnoj odgovornosti studenata. **PIŠITE DVOSTRANO!** xii	POPUNJAVA NASTAVNIK
IME I PREZIME: DOMAGOJ GROZAJ **BROJ INDEKSA:** 19 - 1-0056-2011	Broj ↓ bodova

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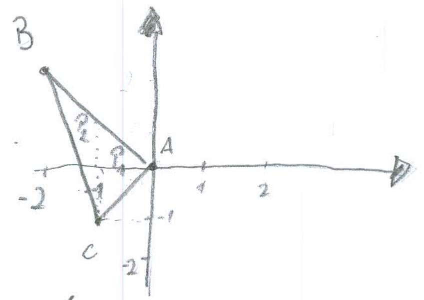
6) $A(0,0)$ $B(-2,2)$ $C(-1,-1)$

$(y - y_1)(x_2 - x_1) = (y_2 - y_1)(x - x_1)$



AB $(y-0)(-2-0) = (2-0)(x-0)$

$-2y = 2x \quad /:-2$

$y = -x$

AC $(y-0)(-1-0) = (-1-0)(x-0)$

$-y = -x$

$y = x$

BC $(y-2)(-1+2) = (-1-2)(x-2)$

$-y + 2y + 2 - 4 = -x + 2 - 2x + 4$

$y - 2 = -3x + 6 \qquad y = -3x + 8$

$P_1 = \int_0^{-1} AC - AB$

$= ?$

$P_2 = \int_{-1}^{-2} AC - BC$

$\int_{-1}^{-2} -2x + 8 \, dx$

$= -2\frac{x^2}{2}\Big|_{-1}^{-2}$

$= -4 - 1$

$= -5$

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IME I PREZIME: ANTE PAVLOVIĆ **BROJ INDEKSA:** 54959/2007

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$\int x^\alpha dx = \frac{x^{\alpha+1}}{\alpha+1}$, $\alpha \neq -1$	$\int \tan x \, dx = -\ln\|\cos x\| + C$	$\int \frac{dx}{x^2-a^2} = \frac{1}{2a}\ln\left\|\frac{x-a}{x+a}\right\| + C$
$\int \frac{dx}{x} = \ln\|x\| + C$	$\int \cot x \, dx = \ln\|\sin x\| + C$	$\int \frac{dx}{\sqrt{x^2 \pm a^2}} = \ln\left\|x + \sqrt{x^2 \pm a^2}\right\| + C$
$\int e^x dx = e^x + C$	$\int \frac{dx}{\cos^2 x} = \tan x + C$	$\int \frac{dx}{\sqrt{a^2-x^2}} = \arcsin\frac{x}{a} + C$
$\int a^x dx = \frac{a^x}{\ln a} + C$	$\int \frac{dx}{\sin^2 x} = -\cot x + C$	$\int \frac{dx}{\sqrt{2ax-x^2}} = \arccos\left(1 - \frac{x}{a}\right) + C$
$\int \sin x \, dx = -\cos x + C$	$\int \sqrt{x^2 \pm a^2} \, dx = \frac{1}{2}\left[x\sqrt{x^2 \pm a^2} \pm a^2 \ln\left(x + \sqrt{x^2 \pm a^2}\right)\right] + C$	
$\int \cos x \, dx = \sin x + C$	$\int \sqrt{a^2-x^2} \, dx = \frac{1}{2}\left[x\sqrt{a^2-x^2} + a^2 \arcsin\left(\frac{x}{a}\right)\right] + C$	

3. $f(x,y) = \dfrac{1}{1+x^2+y^2}$

MATEMATIKA 2: Ispit se održava sukladno objavljenim pravilima. Na snazi je Pravilnik o stegovnoj odgovornosti studenata. **PIŠITE DVOSTRANO!** xii	POPUNJAVA NASTAVNIK
IME I PREZIME: DENIS ILIC **BROJ INDEKSA:** 56194-2008	Broj ↓ bodova

1. Riješiti $y'' - y = -x + 1$ i odrediti posebno rješenje koje udovoljava početnom uvjetu $x = 0$, $y = 0$, $y' = 0$. 20
2. Provjeriti da funkcija $f(x) = xe^x$ zadovoljava diferencijalnu jednadžbu $y'' - 2y' + y = 0$ i početne uvjete $y(0) = 0$ i $y'(0) = 1$. 15
3. Skicirati razinske krivulje funkcije $f(x, y) = \frac{1}{1+x^2+y^2}$. 15
4. Numeričkom integracijom odrediti vrijednost $\int_1^2 \frac{e^x}{x} dx$. (bodovanje: 20 za rel. grešku $\leq 3\%$, 15 za rel. grešku $\lessapprox 6\%$, 8 za rel. grešku $\lessapprox 10\%$) 20
5. $\displaystyle\int_0^\pi \frac{dx}{2\sin x - \cos x + 5} = ?$ 15
6. Integriranjem izračunati površinu trokuta zadanog točkama $A(0,0)$, $B(-2,2)$, $C(-1,-1)$. 15

Ukupno: 0

f	$\frac{df}{dx}$
x^α $(\alpha \neq 0)$	$\alpha x^{\alpha-1}$
$\ln x$	$\frac{1}{x}$
$\log_\alpha x$ $(\alpha > 0)$	$\frac{1}{x \ln \alpha}$
e^x	e^x
α^x $(\alpha > 0)$	$\alpha^x \ln \alpha$
$\sin x$	$\cos x$
$\cos x$	$-\sin x$
$\tan x$	$\frac{1}{\cos^2 x}$
$\cot x$	$\frac{-1}{\sin^2 x}$
$\arcsin x$	$\frac{1}{\sqrt{1-x^2}}$
$\arctan x$	$\frac{1}{1+x^2}$

Tablica nekih integrala		
$\int dx = x + C$	$\int \frac{dx}{a^2+x^2} = \frac{1}{a} \arctan \frac{x}{a} + C$	$\int \frac{dx}{a^2-x^2} = \frac{1}{2a} \ln \left\lvert \frac{a+x}{a-x} \right\rvert + C$
$\int x^\alpha dx = \frac{x^{\alpha+1}}{\alpha+1}$, $\alpha \neq -1$	$\int \tan x \, dx = -\ln \lvert\cos x\rvert + C$	$\int \frac{dx}{x^2-a^2} = \frac{1}{2a} \ln \left\lvert \frac{x-a}{x+a} \right\rvert + C$
$\int \frac{dx}{x} = \ln \lvert x \rvert + C$	$\int \cot x \, dx = \ln \lvert\sin x\rvert + C$	$\int \frac{dx}{\sqrt{x^2 \pm a^2}} = \ln \left\lvert x + \sqrt{x^2 \pm a^2} \right\rvert + C$
$\int e^x dx = e^x + C$	$\int \frac{dx}{\cos^2 x} = \tan x + C$	$\int \frac{dx}{\sqrt{a^2-x^2}} = \arcsin \frac{x}{a} + C$
$\int a^x dx = \frac{a^x}{\ln a} + C$	$\int \frac{dx}{\sin^2 x} = -\cot x + C$	$\int \frac{dx}{\sqrt{2ax-x^2}} = \arccos \left(1 - \frac{x}{a}\right) + C$
$\int \sin x \, dx = -\cos x + C$	$\int \sqrt{x^2 \pm a^2} \, dx = \frac{1}{2} \left[x\sqrt{x^2 \pm a^2} \pm a^2 \ln \left(x + \sqrt{x^2 \pm a^2} \right) \right] + C$	
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(3) $f(x, y) = \dfrac{1}{1+x^2+y^2}$

(1) $y'' - y = -x + 1$ poč. uvj. $x = 0$, $y = 0$, $y' = 0$

(5) $\displaystyle\int_0^\pi \frac{dx}{2\sin x - \cos x + 5}$

MATEMATIKA 2: Ispit se održava sukladno objavljenim pravilima. Na snazi je Pravilnik o stegovnoj odgovornosti studenata. **PIŠITE DVOSTRANO!** xii	POPUNJAVA NASTAVNIK
IME I PREZIME: ROKO DUŠEVIĆ **BROJ INDEKSA:** 57351-2009	Broj ↓ bodova

1. Riješiti $y'' - y = -x + 1$ i odrediti posebno rješenje koje udovoljava početnom uvjetu $x = 0$, $y = 0$, $y' = 0$. 20
2. Provjeriti da funkcija $f(x) = xe^x$ zadovoljava diferencijalnu jednadžbu $y'' - 2y' + y = 0$ i početne uvjete $y(0) = 0$ i $y'(0) = 1$. 15
3. Skicirati razinske krivulje funkcije $f(x, y) = \frac{1}{1+x^2+y^2}$. 15
4. Numeričkom integracijom odrediti vrijednost $\int_1^2 \frac{e^x}{x} dx$. (bodovanje: 20 za rel. grešku $\leq 3\%$, 15 za rel. grešku $\lessapprox 6\%$, 8 za rel. grešku $\lessapprox 10\%$) 20
5. $\displaystyle\int_0^\pi \frac{dx}{2\sin x - \cos x + 5} = ?$ 15
6. Integriranjem izračunati površinu trokuta zadanog točkama $A(0, 0)$, $B(-2, 2)$, $C(-1, -1)$. 15

Ukupno: 0

f	$\frac{df}{dx}$
x^α $(\alpha \neq 0)$	$\alpha x^{\alpha-1}$
$\ln x$	$\frac{1}{x}$
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Tablica nekih integrala		
$\int dx = x + C$	$\int \frac{dx}{a^2+x^2} = \frac{1}{a}\arctan\frac{x}{a} + C$	$\int \frac{dx}{a^2-x^2} = \frac{1}{2a}\ln\left\|\frac{a+x}{a-x}\right\| + C$
$\int x^\alpha dx = \frac{x^{\alpha+1}}{\alpha+1}$, $\alpha \neq -1$	$\int \tan x\, dx = -\ln\|\cos x\| + C$	$\int \frac{dx}{x^2-a^2} = \frac{1}{2a}\ln\left\|\frac{x-a}{x+a}\right\| + C$
$\int \frac{dx}{x} = \ln\|x\| + C$	$\int \cot x\, dx = \ln\|\sin x\| + C$	$\int \frac{dx}{\sqrt{x^2 \pm a^2}} = \ln\left\|x + \sqrt{x^2 \pm a^2}\right\| + C$
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5. $\displaystyle\int_0^\pi \frac{dx}{2\sin x - \cos x + 5} =$

MATEMATIKA 2: Ispit se održava sukladno objavljenim pravilima. Na snazi je Pravilnik o stegovnoj odgovornosti studenata. **PIŠITE DVOSTRANO!** xii	POPUNJAVA NASTAVNIK
IME I PREZIME: ANDRO KLARIN **BROJ INDEKSA:**	Broj ↓ bodova

1. Riješiti $y'' - y = -x + 1$ i odrediti posebno rješenje koje udovoljava početnom uvjetu $x = 0$, $y = 0$, $y' = 0$. 20

2. Provjeriti da funkcija $f(x) = xe^x$ zadovoljava diferencijalnu jednadžbu $y'' - 2y' + y = 0$ i početne uvjete $y(0) = 0$ i $y'(0) = 1$. 15

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6. Integriranjem izračunati površinu trokuta zadanog točkama $A(0, 0)$, $B(-2, 2)$, $C(-1, -1)$. 15

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$\sin x$	$\cos x$
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$\int x^\alpha dx = \frac{x^{\alpha+1}}{\alpha+1}$, $\alpha \neq -1$	$\int \tan x\, dx = -\ln \lvert\cos x\rvert + C$	$\int \frac{dx}{x^2 - a^2} = \frac{1}{2a} \ln \left\lvert \frac{x-a}{x+a} \right\rvert + C$
$\int \frac{dx}{x} = \ln \lvert x\rvert + C$	$\int \cot x\, dx = \ln \lvert\sin x\rvert + C$	$\int \frac{dx}{\sqrt{x^2 \pm a^2}} = \ln \left\lvert x + \sqrt{x^2 \pm a^2} \right\rvert + C$
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$\int \cos x\, dx = \sin x + C$	$\int \sqrt{a^2 - x^2}\, dx = \frac{1}{2} \left[x\sqrt{a^2 - x^2} + a^2 \arcsin \left(\frac{x}{a}\right)\right] + C$	