

Samarqand davlat universitetning Kattaqo'rg'on filiali Aniq va tabiiy fanlar fakulteti 4-kurs Axborot tizimlari va texnologiyalari (tarmoqlar va sohalar bo'yicha) yo'nalishi Kompyuterli matematik tizimlar fanidan yakuniy nazorat savollar

Imtihon shakli: amaliy

Savolning tartib raqami	Savolning qiyinlik darajasi	Savolning qanday mashg'ulotga tegishliligi	Mavzu nomeri	Savol matni
1.	1	A	1	$y \frac{\partial z}{\partial x} - x \frac{\partial z}{\partial y} = y^2 - x^2, \quad y = 1, \quad z = x^2 - 1$ Berilgan differensial tenglamani Maple dasturi yordamida yeching va ishchi varaqni hujjatlashtiring
2.	1	A	1	$y \frac{\partial z}{\partial x} + x \frac{\partial z}{\partial y} = x^2 + y^2, \quad x = 1, \quad z = 1 + 2y + 3y^2$ Berilgan differensial tenglamani Maple dasturi yordamida yeching va ishchi varaqni hujjatlashtiring
3.	1	A	1	$x \frac{\partial z}{\partial x} - y \frac{\partial z}{\partial y} = x - y, \quad x = 1, \quad z = y^2 + 1$ Berilgan differensial tenglamani Maple dasturi yordamida yeching va ishchi varaqni hujjatlashtiring
4.	1	A	1	$\frac{1}{x} \frac{\partial z}{\partial x} + \frac{1}{y} \frac{\partial z}{\partial y} = 4, \quad y^2 = z, \quad x = 0$ Berilgan differensial tenglamani Maple dasturi yordamida yeching va ishchi varaqni hujjatlashtiring
5.	1	A	1	$(x - z) \frac{\partial z}{\partial x} + (y - z) \frac{\partial z}{\partial y} = 2z, \quad x - y = 2, \quad z + 2x = 1$

				Berilgan differensial tenglamani Maple dasturi yordamida yeching va ishchi varaqni hujjatlashtiring
6.	1	A	3	$y = e^x - 4x + 2$ Berilgan tenglamani vatarlar usulidan foydalanib yeching
7.	1	A	3	$y = \ln(x+1) + x^2$ Berilgan tenglamani vatarlar usulidan foydalanib yeching
8.	1	A	3	$y = \frac{x^2 + 1}{x - 2}$ Berilgan tenglamani vatarlar usulidan foydalanib yeching
9.	1	A	3	$y = \sin(x) + \cos(2x)$ Berilgan tenglamani vatarlar usulidan foydalanib yeching
10.	1	A	3	$y = x^2 + 3x + 2$ Berilgan tenglamani vatarlar usulidan foydalanib yeching
11.	1	A	11	$y = 3x^4 - \frac{1}{3}x^3 + \ln 2$ Berilgan funksiyaning grafigini chizing va ishchi varaqni hujjatlashtiring
12.	1	A	11	$y = \frac{1}{6}x^6 + 3x^4 - 2x$ Berilgan funksiyaning grafigini chizing va ishchi varaqni hujjatlashtiring
13.	1	A	12	$y = \sqrt{x} - \frac{3}{x} + \frac{1}{3x^3}$ Berilgan funksiyaning grafigini chizing va ishchi varaqni hujjatlashtiring
14.	1	A	12	$y = \frac{xe^x - e^{-x}}{x^2}$ Berilgan funksiyaning grafigini chizing va ishchi varaqni hujjatlashtiring
15.	1	A	12	$y = \frac{2^x + 3^x}{2^x - 3^x}$ Berilgan funksiyaning grafigini chizing va ishchi varaqni hujjatlashtiring
16.	1	A	15	$A = \begin{bmatrix} 4 & 1 & 0 \\ 2 & 3 & 1 \\ 1 & 1 & 2 \end{bmatrix}$ Berilgan matritsaning xos son va xos vektorini toping va ishchi varaqni hujjatlashtiring
17.	1	A	15	$B = \begin{bmatrix} 5 & 2 & 1 \\ 1 & 4 & 3 \\ 2 & 1 & 3 \end{bmatrix}$

				Berilgan matritsaning xos son va xos vektorini toping va ishchi varaqni hujjatlashtiring
18.	1	A	15	$C = \begin{bmatrix} 6 & 1 & 3 \\ 2 & 5 & 1 \\ 1 & 2 & 4 \end{bmatrix}$ Berilgan matritsaning xos son va xos vektorini toping va ishchi varaqni hujjatlashtiring
19.	1	A	15	$D = \begin{bmatrix} 7 & 2 & 1 \\ 3 & 6 & 2 \\ 1 & 3 & 5 \end{bmatrix}$ Berilgan matritsaning xos son va xos vektorini toping va ishchi varaqni hujjatlashtiring
20.	1	A	15	$E = \begin{bmatrix} 8 & 3 & 1 \\ 2 & 7 & 4 \\ 3 & 1 & 6 \end{bmatrix}$ Berilgan matritsaning xos son va xos vektorini toping va ishchi varaqni hujjatlashtiring
21.	1	A	20	$\frac{dy}{dx} = y, y(0) = 1$ Oddiy differensial tenglamani yeching va ishchi varaqni hujjatlashtiring
22.	1	A	20	$\frac{dy}{dx} = -2y + 1, y(0) = 1$ Oddiy differensial tenglamani yeching va ishchi varaqni hujjatlashtiring
23.	1	A	20	$\frac{d^2y}{dx^2} = -y, y(0) = 0, y'(0) = 1$ Oddiy differensial tenglamani yeching va ishchi varaqni hujjatlashtiring
24.	1	A	20	$\frac{dy}{dx} = 3x + 2y, y(0) = 1$ Oddiy differensial tenglamani yeching va ishchi varaqni hujjatlashtiring
25.	1	A	20	$\frac{dy}{dx} = -y + \sin(x), y(0) = 0$ Oddiy differensial tenglamani yeching va ishchi varaqni hujjatlashtiring
26.	1	A	17	$\int_0^1 (x^2 + 1) dx$ Gauss tipidagi kvadratur formulalardan foydalanib integralni hisoblang
27.	1	A	17	$\int_0^2 e^x dx$ Gauss tipidagi kvadratur formulalardan foydalanib integralni hisoblang

28.	1	A	17	$\int_0^3 \sin(x) dx$ Gauss tipidagi kvadratur formulalardan foydalanib integralni hisoblang
29.	1	A	17	$\int_0^1 \sqrt{1-x^2} dx$ Gauss tipidagi kvadratur formulalardan foydalanib integralni hisoblang
30.	1	A	17	$\int_0^1 \sqrt{x} dx$ Gauss tipidagi kvadratur formulalardan foydalanib integralni hisoblang
31.	1	A	17	$\int_1^3 \frac{1}{x} dx$ Gauss tipidagi kvadratur formulalardan foydalanib integralni hisoblang
32.	1	A	13	$\begin{cases} x^2 + 3y^2 = 9 \\ 2x^2 - y = 4 \end{cases}$ Berilgan tenglamalar sistemasini Nyuton usulidan foydalanib yeching
33.	1	A	13	$\begin{cases} x^2 - y^2 = 16 \\ xy = 15 \end{cases}$ Berilgan tenglamalar sistemasini Nyuton usulidan foydalanib yeching
34.	1	A	13	$\begin{cases} x^3 + y^3 = 27 \\ x + y = 3 \end{cases}$ Berilgan tenglamalar sistemasini Nyuton usulidan foydalanib yeching
35.	1	A	13	$\begin{cases} e^x + y = 5 \\ \ln(y) + x = 2 \end{cases}$ Berilgan tenglamalar sistemasini Nyuton usulidan foydalanib yeching
36.	1	A	13	$\begin{cases} x^2 + y^2 = 1 \\ x^3 + y = 0 \end{cases}$ Berilgan tenglamalar sistemasini Nyuton usulidan foydalanib yeching
37.	1	A	22	$y''(x) + y(x) = \sin(x), y(0) = 0, y(\pi) = 0$ Berilgan ikkinchi tartibli oddiy differensial tenglamani yeching
38.	1	A	22	$y''(x) = -e^x, y(0) = 1, y(1) = 0$

				Berilgan ikkinchi tartibli oddiy differensial tenglamani yeching
39.	1	A	22	$y'' + 4y = 0, y(0) = 2, y'(0) = 0$ Berilgan tenglamani sonli yechimini toping
40.	1	A	22	$y'' + 2y' + 2y = \cos t, y(0) = 0, y'(0) = 1$ Berilgan tenglamani sonli yechimini toping
41.	1	A	22	$y'' + 5y' + 6y = 0, y(0) = 1, y'(0) = 1$ Berilgan tenglamani sonli yechimini toping
42.	1	A	22	$y'' + 2y' + 5y = \sin(2t), y(0) = 0, y'(0) = 2$ Berilgan tenglamani sonli yechimini toping
43.	1	A	22	$y'' - y' + y = \sin(t) + t^2, y(0) = 1, y'(0) = 0$ Berilgan tenglamani sonli yechimini toping
44.	1	A	17	Quyida berilgan rasional koeffitsiyentli tenglamalar sistemasini Gauss usulida yeching, sistema koeffitsiyentlaridan tuzilgan determinantni hisoblang: $\left. \begin{aligned} 1,4x_1 + 0,3x_2 - 0,4x_3 + 0,9x_4 &= 1,3, \\ 0,6x_1 - 0,4x_2 + 1,3x_3 - 0,6x_4 &= -0,4, \\ 0,8x_1 - 2,2x_2 - 0,5x_3 + 0,5x_4 &= 0,6, \\ 0,3x_1 + 1,4x_2 + 0,6x_3 - 1,3x_4 &= 0,9. \end{aligned} \right\}$
45.	1	A	17	Quyida berilgan rasional koeffitsiyentli tenglamalar sistemasini Gauss usulida yeching, sistema koeffitsiyentlaridan tuzilgan determinantni hisoblang: $\left. \begin{aligned} 7,5x_1 - 2,4x_2 + 4,1x_3 + 1,2x_4 &= 9,9, \\ 7,1x_1 + 2,7x_2 - 1,4x_3 + 1,4x_4 &= 6,9, \\ -1,8x_1 - x_2 + 4,3x_3 + 1,3x_4 &= 7,9, \\ 1,5x_1 - 3,4x_2 + 7,8x_3 - 1,8x_4 &= 15,1. \end{aligned} \right\}$
46.	1	A	17	Quyida berilgan rasional koeffitsiyentli tenglamalar sistemasini Gauss usulida yeching, sistema koeffitsiyentlaridan tuzilgan determinantni hisoblang: $\left. \begin{aligned} -3,1x_1 + 2x_2 - 4x_3 + 5x_4 &= 4,9, \\ 2x_1 - x_2 + x_3 + 1,2x_4 &= -9,7, \\ x_1 - 3x_2 - 2x_3 + 2,7x_4 &= 13,1, \\ 5x_1 - x_2 + 3x_3 + 7,8x_4 &= 10,6. \end{aligned} \right\}$
47.	1	A	17	Quyida berilgan rasional koeffitsiyentli tenglamalar sistemasini Gauss usulida yeching, sistema koeffitsiyentlaridan tuzilgan determinantni hisoblang: $\left. \begin{aligned} 2,6x_1 - 3,1x_2 + 3,4x_3 + 2,5x_4 &= 3,5, \\ 6,6x_1 + 9,9x_2 - 2,3x_3 - 0,1x_4 &= -4,3, \\ 10,1x_1 + 3,2x_2 - 3,7x_3 - 2,8x_4 &= 3,8, \\ 8,9x_1 + 6,4x_2 + 1,1x_3 + 3,9x_4 &= -7,8. \end{aligned} \right\}$

48.	1	A	17	Quyida berilgan rasional koeffitsiyentli tenglamalar sistemasini Gauss usulida yeching, sistema koeffitsiyentlaridan tuzilgan determinantni hisoblang: $\left. \begin{aligned} 3,5x_1 + 0,2x_2 + 3,8x_3 - 0,3x_4 &= 0,8, \\ 4,5x_1 + 2,1x_2 - 0,1x_3 - 0,2x_4 &= 1,1, \\ -2,1x_1 + 3,2x_2 + 0,2x_3 - 0,2x_4 &= 0,2, \\ 3,2x_1 + 1,8x_2 - 3,2x_3 + 0,2x_4 &= 0,1.. \end{aligned} \right\}$
49.	1	A	17	Quyida berilgan rasional koeffitsiyentli tenglamalar sistemasini Gauss usulida yeching, sistema koeffitsiyentlaridan tuzilgan determinantni hisoblang: $\left. \begin{aligned} 1,1x_1 + 2,3x_2 + 5,5x_3 + 2,3x_4 &= 7,9, \\ 3,3x_1 + 1,3x_2 + 1,8x_3 + 3,1x_4 &= 2,6, \\ 2,6x_1 + 4,3x_2 + 1,1x_3 + 1,7x_4 &= 10,6, \\ 1,1x_1 + 3,8x_2 + 2,9x_3 + 2,7x_4 &= 9,3. \end{aligned} \right\}$
50.	1	A	17	Quyida berilgan rasional koeffitsiyentli tenglamalar sistemasini Gauss usulida yeching, sistema koeffitsiyentlaridan tuzilgan determinantni hisoblang: $\left. \begin{aligned} 1,3x_1 + 3,2x_2 + 2,1x_3 + 3,3x_4 &= 1,9, \\ 3,5x_1 - 4,1x_2 - 5,3x_3 - 2,5x_4 &= -4,7, \\ 2,8x_1 + 3,5x_2 - 7,6x_3 - 4,9x_4 &= -6,7, \\ 1,4x_1 + 2,8x_2 + 3,9x_3 - 1,8x_4 &= -4,8. \end{aligned} \right\}$
51.	1	A	18	Quyidagi birinchi tartibli differensial tenglamalar uchun Koshi masalasini $h=0,1$ bo'lganda Eyler usuli orqali taqribiy yechimini toping: $y'=x/(x+y), \quad y(0)=1, \quad [0,1]$
52.	1	A	18	Quyidagi birinchi tartibli differensial tenglamalar uchun Koshi masalasini $h=0,1$ bo'lganda Eyler usuli orqali taqribiy yechimini toping: $y'-2y=3e^x, \quad y(0,3)=1,415, \quad [0,1;0,5]$
53.	1	A	18	Quyidagi birinchi tartibli differensial tenglamalar uchun Koshi masalasini $h=0,1$ bo'lganda Eyler usuli orqali taqribiy yechimini toping: $y'=x+y^2, \quad y(0)=0, \quad [0;0,3]$
54.	1	A	18	Quyidagi birinchi tartibli differensial tenglamalar uchun Koshi masalasini $h=0,1$ bo'lganda Eyler usuli orqali taqribiy yechimini toping: $y'=y^2-x^2, \quad y(1)=1, \quad [1;2]$
55.	1	A	18	Quyidagi birinchi tartibli differensial tenglamalar uchun Koshi masalasini $h=0,1$ bo'lganda Eyler usuli orqali taqribiy yechimini toping: $y'=x^2+y^2, \quad y(0)=0.27, \quad [0;1]$