



Samarqand davlat universitetning kattaqo'rg'on filiali Aniq va tabiiy fanlar fakulteti 3-bosqich Axborot tizimlari va texnologiyalari yo'nalishi talabalariga 5-semestr uchun « Kompyuter algebrasi tizimlari» fanidan yakuniy nazorat savollari

Imtihon shakli: amaliy

Savolning tartib raqami	Savolning qiyinlik darajasi	Savolning qanday mashg'ulotga tegishliligi	Mavzu nomeri	Savol matni
1.	1	A	3-6	$(a + b + 2) \cdot (a + b) - (a - b)^2 + 1$, $a^5 + a^4 - 2a^3 - 2a^2 + a + 1$, $(a + b)(a + b + 2) - (a - b)(a - b - 2)$ Ushbu ifoda uchun Ishchi varaqni hujjatlashtiring hamda ko'paytuvchilarga ajrating.
2.	1	A	3-6	$(x^2 + 9)^2 - 36x^2$, $1 - (8a - 3)^2$, $x^4 + x^2 + 1$ Ushbu ifoda uchun Ishchi varaqni hujjatlashtiring hamda ko'paytuvchilarga ajrating.
3.	2	A	3-6	$b^2 + ab - 2a^2 - b + a$, $2a^2b - 3a + 10ab^2 - 15b$, $(x - y)^3 - (z - y)^3 + (z - x)^3$ Ushbu ifoda uchun Ishchi varaqni hujjatlashtiring hamda ko'paytuvchilarga ajrating.
4.	2	A	3-6	add, mul, select, remove komandalarini ishlash jarayonini namoyish qiling hamda ishchi varaqni hujjatlashtiring.
5.	2	A	3-6	zip, sort, rhs, lhs, numer, denom komandalarini ishlash jarayonini namoyish

				qiling hamda ishchi varaqni hujjatlashtiring.
6.	2	A	3-6	select remove, has, subs, convert komandalarini ishlash jarayonini namoyish qiling hamda ishchi varaqni hujjatlashtiring.
7.	2	A		eval, evalm, evalf komandalarini ishlash jarayonini namoyish qiling hamda ishchi varaqni hujjatlashtiring.
8.	2	A	3-6	normal, round, floor, ceil komandalarini ishlash jarayonini namoyish qiling hamda ishchi varaqni hujjatlashtiring.
9.	2	A	3-6	abs, ceil, frac, trunc komandalarini ishlash jarayonini namoyish qiling hamda ishchi varaqni hujjatlashtiring.
10.	1	A	3-6	degree, ldegree, coeff, coeffs komandalarini ishlash jarayonini namoyish qiling hamda ishchi varaqni hujjatlashtiring.
11.	1	A	3-6	lcoeff, tcoeff, isprime, irem komandalarini ishlash jarayonini namoyish qiling hamda ishchi varaqni hujjatlashtiring.
12.	2	A	3-6	iquo, ifactor, lcm, igcd komandalarini ishlash jarayonini namoyish qiling hamda ishchi varaqni hujjatlashtiring.
13.	2	A	3-6	rationalize, map, combine komandalarini ishlash jarayonini namoyish qiling hamda ishchi varaqni hujjatlashtiring.
14.	1	A	3-6	seq, \$, has komandalarini ishlash jarayonini namoyish qiling hamda ishchi varaqni hujjatlashtiring.
15.	1	A	7	$\left(18\frac{1}{3} + x\right) : 3\frac{1}{7} = 7$ chiziqli tenglamani yeching hamda ishchi varaqni hujjatlashtiring.
16.	2	A	7	$\frac{3x - 11}{4} - \frac{3 - 5x}{8} = \frac{x + 6}{2}$ chiziqli tenglamani yeching hamda ishchi varaqni hujjatlashtiring.
17.	1	A	7	$0,7(6y - 5) = 0,4(y - 3) - 1,16$ chiziqli tenglamani yeching hamda ishchi varaqni hujjatlashtiring.

18.	2	A	7	$(x + 2\frac{22}{25}) : 7\frac{1}{3} = 3$ chiziqli tenglamani yeching hamda ishchi varaqni hujjatlashtiring.
19.	2	A	7	$6 - \frac{x-1}{2} = \frac{3-x}{2} + \frac{x-2}{3}$ chiziqli tenglamani yeching hamda ishchi varaqni hujjatlashtiring.
20.	2	A	7	$0,9(4x - 2) = 0,5(3x - 4) + 4,4$ chiziqli tenglamani yeching hamda ishchi varaqni hujjatlashtiring.
21.	2	A	7	$(x + 3\frac{2}{9}) : 4\frac{1}{6} = 6$ chiziqli tenglamani yeching hamda ishchi varaqni hujjatlashtiring.
22.	2	A	7	$(3\frac{19}{22} + x) : 4\frac{1}{5} = 5$ chiziqli tenglamani yeching hamda ishchi varaqni hujjatlashtiring.
23.	3	A	7	$2,8x - 3(2x - 1) = 2,8 - 3,19x$ chiziqli tenglamani yeching hamda ishchi varaqni hujjatlashtiring.
24.	1	A	7	$(\frac{1}{3} + x) : 7 = (\frac{3}{4} + x) : 9$ chiziqli tenglamani yeching hamda ishchi varaqni hujjatlashtiring.
25.	1	A	7	$(4\frac{3}{8}x + 5\frac{1}{16}) \cdot \frac{4}{15} = \frac{5}{12}x + 2\frac{2}{5}$ chiziqli tenglamani yeching hamda ishchi varaqni hujjatlashtiring.
26.	1	A	7	$x^2 - 13x + 36 = 0$ kvadrat tenglamani yeching hamda ishchi varaqni hujjatlashtiring.

27.	1	A	7	$x - 6 = \frac{13}{x}$ kvadrat tenglamani yeching hamda ishchi varaqni hujjatlashtiring.
28.	2	A	7	$x^2 - 18x + 45 = 0$ kvadrat tenglamani yeching hamda ishchi varaqni hujjatlashtiring.
29.	1	A	12	$\begin{cases} 3x - 2y = -8 \\ x + 3y = 1 \end{cases}$ tenglamalar sistemasini yeching hamda ishchi varaqni hujjatlashtiring.
30.	1	A	12	$\begin{cases} 2x - 3y = 5 \\ 3x + y = 2 \end{cases}$ tenglamalar sistemasini yeching hamda ishchi varaqni hujjatlashtiring.
31.	1	A	12	$\begin{cases} x + y = 5 \\ x - y = -1 \end{cases}$ tenglamalar sistemasini yeching hamda ishchi varaqni hujjatlashtiring.
32.	2	A	12	$\begin{cases} 2x + y - 8 = 0 \\ 3x + 4y - 7 = 0 \end{cases}$ tenglamalar sistemasini yeching hamda ishchi varaqni hujjatlashtiring.
33.	2	A	12	$\begin{cases} \frac{x}{4} + \frac{y}{4} = 2 \\ \frac{x}{6} + \frac{y}{3} = 2 \end{cases}$ tenglamalar sistemasini yeching hamda ishchi varaqni hujjatlashtiring.
34.	2	A	12	$\begin{cases} \frac{2x+5y}{y} = 31 \\ \frac{x-2y}{y} = 11 \end{cases}$ tenglamalar sistemasini yeching hamda ishchi varaqni hujjatlashtiring.

35.	2	A	12	$\begin{cases} x + 2y - 3 = 0 \\ 2x - 3y + 8 = 0 \end{cases}$ tenglamalar sistemasini yeching hamda ishchi varaqni hujjatlashtiring.
36.	3	A	12	$\begin{cases} \frac{x+y}{2} - \frac{2y}{3} = \frac{5}{2} \\ \frac{3x}{2} + 2y = 0 \end{cases}$ tenglamalar sistemasini yeching hamda ishchi varaqni hujjatlashtiring.
37.	3	A	12	$\begin{cases} \frac{3x-y+2}{7} + \frac{x+4y}{2} = 4 \\ \frac{3x-y+2}{7} - \frac{x+4y}{3} = -1 \end{cases}$ tenglamalar sistemasini yeching hamda ishchi varaqni hujjatlashtiring.
38.	1	A	12	$\begin{cases} x^2 + y^2 - 2xy = 1 \\ x + y = 3 \end{cases}$ tenglamalar sistemasini yeching hamda ishchi varaqni hujjatlashtiring.
39.	1	A	12	$\begin{cases} x + y = 3 \\ x^2 - y^2 = 6 \end{cases}$ tenglamalar sistemasini yeching hamda ishchi varaqni hujjatlashtiring.
40.	1	A	12	$\begin{cases} x^2 - y^2 - 3x = 12 \\ x - y = 0 \end{cases}$ tenglamalar sistemasini yeching hamda ishchi varaqni hujjatlashtiring.
41.	1	A	7	$\frac{1-x}{2} + 3 < 3x - \frac{2x+1}{4}$ tengsizlikni yeching hamda ishchi varaqni hujjatlashtiring.
42.	2	A	7	$(x+1)^2 > (x+2)^2$ tengsizlikni yeching hamda ishchi varaqni hujjatlashtiring.

43.	2	A	7	$8 + \frac{6x - 8}{10} > \frac{x - 2}{6} + \frac{1 - 5x}{8} + \frac{1}{4}$ tengsizlikni yeching hamda ishchi varaqni hujjatlashtiring.
44.	1	A	7	$1 - \frac{17 - 3x}{2} > 1,5x$ tengsizlikni yeching hamda ishchi varaqni hujjatlashtiring.
45.	1	A	7	$\frac{2x - 7}{6} + \frac{7x - 2}{3} < 3 - \frac{1 - x}{2}$ tengsizlikni yeching hamda ishchi varaqni hujjatlashtiring.
46.	1	A	12	$\begin{cases} 2x - 3(x - 5) > 10 - 3x \\ x(x + 2) - 4 \leq (x - 1)^2 + 7 \end{cases}$ tengsizliklar sistemasini yeching hamda ishchi varaqni hujjatlashtiring.
47.	1	A	12	$\begin{cases} 4(x - 3) - 3 > 8x + 1 \\ 2 + x(x + 3) \leq (x + 2)^2 + 5 \end{cases}$ tengsizliklar sistemasini yeching hamda ishchi varaqni hujjatlashtiring.
48.	1	A	12	$\begin{cases} 7x + 3 \leq 9x - 1 \\ 20 - 3x \geq 4x - 15 \end{cases}$ tengsizliklar sistemasini yeching hamda ishchi varaqni hujjatlashtiring.
49.	2	A	12	$\begin{cases} x(x + 1) + 10 > (x + 1)^2 + 3 \\ 3x - 4(x - 7) \geq 16 - 3x \end{cases}$ tengsizliklar sistemasini yeching hamda ishchi varaqni hujjatlashtiring.

50.	1	A	12	$\begin{cases} \frac{y-5}{4} < \frac{2y+3}{3} \\ \frac{4y+1}{2} < \frac{y-4}{3} \end{cases}$ tengsizliklar sistemasini yeching hamda ishchi varaqni hujjatlashtiring.
51.	1	A	12	$\begin{cases} \frac{x-1}{4} \leq \frac{x}{5} \\ \frac{x}{3} > \frac{x+4}{7} \end{cases}$ tengsizliklar sistemasini yeching hamda ishchi varaqni hujjatlashtiring.
52.	1	A	12	$\begin{cases} \frac{3x-2}{4} > \frac{1-5x}{6} \\ 3x-1 \leq 3-2x \end{cases}$ tengsizliklar sistemasini yeching hamda ishchi varaqni hujjatlashtiring.
53.	2	A	12	$\begin{cases} x(9x-5) \geq (1-3x)^2 \\ \frac{5x-3}{12} + \frac{7-2x}{8} \leq 1\frac{1}{3} \end{cases}$ tengsizliklar sistemasini yeching hamda ishchi varaqni hujjatlashtiring.
54.	2	A	12	$\begin{cases} 0,5(2x-5) > \frac{2-x}{2} + 1 \\ 0,2(3x-2) + 3 > \frac{4x}{3} - 0,5(x-1) \end{cases}$ tengsizliklar sistemasini yeching hamda ishchi varaqni hujjatlashtiring.
55.	2	A	12	$\begin{cases} (x+2)(2-x) < (x+3)(4-x) \\ \frac{3+x}{4} + \frac{1-2x}{6} \geq 1 \end{cases}$ tengsizliklar sistemasini yeching hamda ishchi varaqni hujjatlashtiring.
56.	2	A	8	$\frac{\sin^2 x + \sin x}{\cos x} = 0$ tirgonometrik tenglamani yeching hamda ishchi varaqni hujjatlashtiring.
57.	2	A	8	$\frac{1 - \operatorname{tg} \frac{x}{2}}{1 - \operatorname{ctg} \frac{x}{2}} = 2 \sin \frac{x}{2}$ tirgonometrik tenglamani yeching hamda ishchi varaqni hujjatlashtiring.

58.	2	A	8	$ \operatorname{tg}x + \operatorname{ctg}x = \frac{4}{\sqrt{3}}$ tirgonometrik tenglamani yeching hamda ishchi varaqni hujjatlashtiring.
59.	1	A	8	$\frac{\cos^2 x - \cos x}{\sin x} = 0$ tirgonometrik tenglamani yeching hamda ishchi varaqni hujjatlashtiring.
60.	1	A	8	$\operatorname{ctg}x + \frac{\sin x}{1 + \cos x} = 2$ tirgonometrik tenglamani yeching hamda ishchi varaqni hujjatlashtiring.
61.	1	A	8	$\frac{\cos 3x}{\sin 3x - 2\sin x} = \operatorname{tg}x$ tirgonometrik tenglamani yeching hamda ishchi varaqni hujjatlashtiring.
62.	3	A	8	$\cos 4x + \frac{10\operatorname{tg}x}{1 + \operatorname{tg}^2 x} = 3$ tirgonometrik tenglamani yeching hamda ishchi varaqni hujjatlashtiring.
63.	3	A	8	$\frac{\cos 2x}{\frac{\sqrt{2}}{2} + \sin x} = 0$ tirgonometrik tenglamani yeching hamda ishchi varaqni hujjatlashtiring.
64.	3	A	8	$2\sin 2x \geq \operatorname{ctg} \frac{\pi}{4}$ tirgonometrik tengsizlikni yeching hamda ishchi varaqni hujjatlashtiring.
65.	3	A	8	$\sin x \cdot \cos x > \frac{\sqrt{2}}{4}$ tirgonometrik tengsizlikni yeching hamda ishchi varaqni hujjatlashtiring.

66.	2	A	8	$\sin 5x \cdot \cos 4x + \cos 5x \cdot \sin 4x > \frac{1}{2}$ tirgonometrik tengsizlikni yeching hamda ishchi varaqni hujjatlashtiring.
67.	2	A	8	$\cos^2 x < \frac{\sqrt{2}}{2} + \sin^2 x$ tirgonometrik tengsizlikni yeching hamda ishchi varaqni hujjatlashtiring.
68.	2	A	8	$1 - 2\cos 2x > \sin^2 2x$ tirgonometrik tengsizlikni yeching hamda ishchi varaqni hujjatlashtiring.
69.	1	A	8	$1 - 2\sin 4x < \cos^2 4x$ tirgonometrik tengsizlikni yeching hamda ishchi varaqni hujjatlashtiring.
70.	2	A	8	$\sin^2 3x - \cos^2 3x \leq -\frac{\sqrt{3}}{2}$ tirgonometrik tengsizlikni yeching hamda ishchi varaqni hujjatlashtiring.
71.	1	A	8	$\cos^2 x - \frac{5}{2}\cos x + 1 \leq 0$ tirgonometrik tengsizlikni yeching hamda ishchi varaqni hujjatlashtiring.
72.	1	A	9	$f(x) = -x + \frac{x^2}{2}$ berilgan funksiyaning differensialini hisoblang hamda ishchi varaqni hujjatlashtiring.
73.	1	A	13	$y = \frac{3}{\sin^2 x} + 5$ berilgan funksiyaning differensialini hisoblang hamda ishchi varaqni hujjatlashtiring.
74.	1	A	13	$f(x) = 1 + \frac{1}{\cos^2 4x}$ berilgan funksiyaning differensialini hisoblang hamda ishchi varaqni hujjatlashtiring.
75.	1	A	13	$1 + \frac{1}{\sin^2 4x}$ berilgan funksiyaning differensialini hisoblang hamda ishchi varaqni hujjatlashtiring.

76.	1	A	13	$2(2x + 5)^4$ berilgan funksiyaning differensialini hisoblang hamda ishchi varaqni hujjatlashtiring.
77.	1	A	13	$f(x) = \frac{1}{\sin^2(3x+1)}$ berilgan funksiyaning differensialini hisoblang hamda ishchi varaqni hujjatlashtiring.
78.	1	A	13	$F(x) = \frac{1}{2}x^2 + \cos x$ berilgan funksiyaning differensialini hisoblang hamda ishchi varaqni hujjatlashtiring.
79.	2	A	13	$f(x) = \frac{1}{\cos^2(\frac{x}{3}+1)}$ berilgan funksiyaning differensialini hisoblang hamda ishchi varaqni hujjatlashtiring.
80.	2	A	13	$f(x) = 3x^2 - 2\cos(2x + \frac{\pi}{3})$ berilgan funksiyaning differensialini hisoblang hamda ishchi varaqni hujjatlashtiring.
81.	2	A	13	$y = \frac{2x}{(x^2+1)\ln 10}$ berilgan funksiyaning differensialini hisoblang hamda ishchi varaqni hujjatlashtiring.
82.	3	A	10	$\int_0^{e^2-1} \frac{dx}{x+1}$ integralni hisoblang hamda ishchi varaqni hujjatlashtiring.
83.	3	A	10	$\int_0^2 (1-2x)^2 dx$ integralni hisoblang hamda ishchi varaqni hujjatlashtiring.
84.	3	A	10	$\int_{-1}^0 (2x+1)^2 dx$ integralni hisoblang hamda ishchi varaqni hujjatlashtiring.

85.	2	A	10	$\int_{\frac{\pi}{4}}^{\frac{\pi}{2}} (1 + \operatorname{ctg}^2 x) dx$ <p>integralni hisoblang hamda ishchi varaqni hujjatlashtiring.</p>
86.	2	A	10	$\int_0^{\frac{\pi}{4}} \sin 2x dx$ <p>integralni hisoblang hamda ishchi varaqni hujjatlashtiring.</p>
87.	2	A	10	$\int_{-1}^0 (1 + 3x)^2 dx$ <p>integralni hisoblang hamda ishchi varaqni hujjatlashtiring.</p>
88.	2	A	10	$\int_0^{\ln 3} (e^{2t} - e^{-\frac{1}{2}}) dt$ <p>integralni hisoblang hamda ishchi varaqni hujjatlashtiring.</p>
89.	2	A	10	$\int_0^{2\pi} \cos 2x \cdot \cos 7x dx$ <p>integralni hisoblang hamda ishchi varaqni hujjatlashtiring.</p>
90.	2	A	10	$\int_{-\pi/2}^{-\pi/4} \frac{dx}{\cos^2(\frac{\pi}{2} + x)}$ <p>integralni hisoblang hamda ishchi varaqni hujjatlashtiring.</p>
91.	2	A	15	$y = \frac{\sin x}{x}$ funksiyaning grafigini -4π dan 4π gacha bo'lgan intervalda qalin chiziq bilan yasang hamda ishchi varaqni hujjatlashtiring.
92.	2	A	15	$y = \frac{x}{x^2 - 1}$ uzlukli funksiyaning grafigini yasang hamda ishchi varaqni hujjatlashtiring.
93.	2	A	15	$y = \sin 2t, x = \cos 3t, 0 \leq t \leq 2\pi$ parametrik berilgan egri chiziqlarning grafigini

				ramkada chizing hamda ishchi varaqni hujjatlashtiring.
94.	2	A	15	Quyidagi ikkita grafikni bitta rasmda yasang: $y = \ln(3x - 1)$ funksiyaning grafigi va unga urinuvchi $y = \frac{3}{2}x - \ln 2$ funksiyaning grafigini yasang hamda ishchi varaqni hujjatlashtiring.
95.	2	A	15	Aniqmas funksiya grafigining yasang(giperbola): $\frac{x^2}{4} - \frac{y^2}{2} = 16$.
96.	2	A	15	$\frac{x^2}{16} + \frac{y^2}{4} = 1$ ellips ichida berilgan $x = 4\cos^3 t$, $y = 2\sin^3 t$ ($0 \leq t \leq 2\pi$) astroida grafigini bitta rasmda yasang.