

**Toshkent davlat iqtisodiyot universiteti Samarqand filiali 1-bosqich talabalari
uchun “Amaliy matematika-1,2” fanidan nazorat savollari**

Ishchi mavzu (auditoriya dars mavzulari) yuzasidan savollar:

1. Matritsalarini qo‘shish va songa ko‘paytirish
2. Matritsalarini ko‘paytirish.
3. 2-tartibli determinant va uni hisoblash, misollar keltiring.
4. 3-tartibli determinant va uni hisoblash, misollar keltiring.
5. Determinantning xossalari.
6. Minor va algebraik to‘ldiruvchi.
7. Yuqori tartibli determinantlarni hisoblash.
8. Chiziqli tenglamalar sistemasini Gauss usulida yechish algoritmi.
9. Chiziqli tenglamalar sistemasini Kramer usulida yechish algoritmi.
10. Kompleks sonlarning ko‘rsatkichli va trigonometrik shakllari.
11. Kompleks sonlarni qo‘shish va ayirish.
12. Kompleks sonlarni ko‘paytirish va bo‘lish.
13. Kompleks sonlarning moduli, argumenti va qo‘shmasi.
14. Kompleks sonlarni darajaga ko‘tarish formulasi.
15. Kompleks sonlardan ildiz chiqarish formulasi.
16. Vektorlarning skalyar ko‘paytmasi.
17. Vektorlarning aralash ko‘paytmasi.
18. Vektorlarning vektor ko‘paytmasi.
19. Vektorlar orasidagi burchakni topish.
20. Tekislikda to‘g‘ri chiziqning umumiy va burchak koeffitsiyenti tenglamasi.
21. Tekislikda ikki nuqtadan o‘tuvchi to‘g‘ri chiziq tenglamasi.
22. Tekislikda ikki to‘g‘ri chiziq orasidagi burchakni topish formulasini keltirib chiqaring.
23. Elementar funksiyalar va murakkab funksiyalar.
24. Funksiya limiti va xossalari.
25. Chap va o‘ng limitlar.
26. Funksiya uzluksizligi.
27. Funksiya uzilishi va uzulish turlari.
28. 1-va 2-ajoyib limitlar.
29. Funksiya hosilasi.
30. Hosilaning ta’rifi.
31. Hosila hisoblash qoidalari.
32. Elementar funksiyalarning hosilalari jadvali.
33. Funksiya ko‘paytmasining va bo‘linmasining hosilasi.
34. Murakkab funksiyaning hosilasi.

35. Hosilaning mexanik manosi.
36. Funksiyaning yuqori tartibli hosilalari.
37. Funksiya defferensial.
38. Defferensial hisobning asosiy teoremlari.
39. Aniqmas integral .
40. Aniqmas integralning xossalari.
41. Elementar funksiyalarning aniqmas integrallari jadvali.
42. Aniqmas integrallarni bo'laklab integrallash usuli.
43. Aniqmas integrallarda o'zgaruvchilarni almashtirib integrallash usuli.
44. Rastional funksiyalarni integrallash.
45. Quyidagi matritsalarining ko'paytmasini toping:

$$A = \begin{pmatrix} 4 & 1 & -4 \\ 2 & -4 & 6 \\ 1 & 2 & -1 \end{pmatrix}, B = \begin{pmatrix} 0 & -1 & 1 \\ 2 & 5 & 0 \\ 1 & -1 & 2 \end{pmatrix}$$

$$46. \text{ Berilgan matritsaga teskari matritsani toping: } A = \begin{pmatrix} -1 & 0 & 2 \\ 2 & 3 & 2 \\ 3 & 7 & 1 \end{pmatrix}.$$

$$47. \quad A = \begin{pmatrix} 6 & -3 & 5 \\ 2 & 7 & 6 \end{pmatrix}, \quad B = \begin{pmatrix} -3 & 9 \\ 8 & -7 \\ 1 & -5 \end{pmatrix} \quad A \cdot B = ?$$

$$48. \text{ Matritsalarining ko'paytmasini toping: } A = \begin{pmatrix} 2 & 1 & 4 \\ 0 & -1 & 2 \end{pmatrix}, B = \begin{pmatrix} 1 & 2 \\ 3 & 4 \\ -1 & 2 \end{pmatrix}$$

$$49. \text{ Determinantni hisoblang: } \begin{vmatrix} 0 & 1 & 2 & 4 \\ 2 & -1 & 2 & 3 \\ -3 & 0 & 1 & 1 \\ 1 & 2 & -2 & 3 \end{vmatrix}$$

$$50. \text{ Matritsalarining ko'paytmasini toping: } A = \begin{pmatrix} -2 & 1 & -4 \\ 3 & -4 & 0 \\ 1 & 2 & -1 \end{pmatrix}, B = \begin{pmatrix} 2 & -1 & 1 \\ 2 & -1 & 0 \\ 1 & -1 & 2 \end{pmatrix}$$

$$51. \text{ Berilgan matritsaga teskari matritsani toping: } A = \begin{pmatrix} -1 & 0 & 2 \\ 2 & 3 & 2 \\ 3 & 7 & 1 \end{pmatrix}.$$

$$52. \quad A = \begin{pmatrix} 1 & -1 & 1 \\ 2 & 0 & -2 \\ 3 & 3 & 3 \end{pmatrix}, \quad f(x) = 3x^2 - 7x - 4; \text{ ni hisoblang.}$$

53. Tenglamalar sistemasini Kramer usuli yordamida yeching:

$$\begin{cases} 2x - y + 2z = 0, \\ 4x + y + 4z = 6, \\ x + y + 2z = 4. \end{cases}$$

54. Tenglamani yeching:

$$\begin{vmatrix} 6 & 3+x & 2 \\ 5 & 0 & 1 \\ -4 & 1 & -1 \end{vmatrix} = 0$$

55. Tenglamalar sistemasini yeching:

$$\begin{cases} 3x + 2y - z = -1 \\ x - y + 2z = 6 \\ 2x + y - 3z = -5 \end{cases}$$

56. Tenglamalar sistemasini yeching:

$$\begin{cases} x - 3y + z = 1, \\ 2x + y - z = 6, \\ 5x - 4y - 7z = 4. \end{cases}$$

57. Determinantni hisoblang: $\begin{vmatrix} 1 & 0 & 2 & 0 \\ 2 & -1 & 2 & 3 \\ -3 & 0 & 1 & 1 \\ 2 & 1 & -2 & 3 \end{vmatrix}$

58. Berilgan ikki vektor orasidagi burchakni toping:

$$\vec{a} = 5\vec{i} - 3\vec{j} + 4\vec{k}, \quad \vec{b} = 3\vec{i} + 5\vec{j}.$$

59. $N(3, -2)$ nuqtadan o'tuvchi va $2x - 3y + 5 = 0$ to'g'ri chiziqqa parallel bo'lgan to'g'ri chiziq tenglamasini tuzing.

60. $A(1; 2; 0)$, $B(3; 0; -3)$, $C(5; -2; 6)$ nuqtalar berilgan. $\overline{AB}$ va $\overline{AC}$ vektorlarga qurilgan parallelogrammning yuzini toping.

61. $A(4; -4)$ va $B(-3; -1)$ nuqtalardan o'tuvchi to'g'ri chiziq tenglamasini tuzing va uning burchak koeffitsiyentini aniqlang

62. $A(2; -1)$ nuqtadan o'tuvchi va $x + 5y - 7 = 0$ to'g'ri chiziqqa parallel bo'lgan to'g'ri chiziq tenglamasini tuzing.

63. $N(-1, -3)$ nuqtadan $4x + 3y - 12 = 0$ to'g'ri chiziqqacha bo'lgan masofani toping

64. Quyidagi vektorlar orasidagi burchakni toping: $\vec{a} = -7\vec{i} + 2\vec{k}$, $\vec{b} = \vec{i} - 3\vec{j} + 2\vec{k}$.

65. Uchburchakning uchlari berilgan: $A(2; 2)$, $B(-2; -8)$, $C(-6; -2)$. Uchburchakning A uchidan tushirilgan balandligi tenglamasini tuzing.

66. $A(1; 2; 0)$, $B(3; 0; -3)$, $C(5; -2; 6)$ nuqtalar berilgan. $\overline{AB}$ va $\overline{AC}$ vektorlarga qurilgan parallelogrammning yuzini toping.

67. Berilgan vektorlarga qurilgan parallelogrammning yuzini toping:
 $\vec{a} = \vec{i} + 7\vec{j}$, $\vec{b} = -\vec{i} - \vec{j} + 2\vec{k}$.

68. Piramidaning uchlari $A(3; 4; 4)$, $B(2; 2; 1)$, $C(-3; -3; 6)$ $D(3; -6; -3)$ nuqtalarda yotadi. Uning hajmini toping.

69. Uchlari $A(1, 2, 0)$; $B(-1, 2, 1)$; $C(0, -3, 2)$ va $D(1, 0, 1)$ nuqtalarda bo'lgan piramidaning hajmini hisoblang.
70. $N(-1, -3)$ nuqtadan $4x+3y-12=0$ to'g'ri chiziqgacha bo'lgan masofani toping.
71. Uchburchakning uchlari berilgan: $A(2, 2)$, $B(-2, -8)$, $C(-6, -2)$. Uchburchakning A uchidan tushirilgan balandligi tenglamasini tuzing.
72. Uchlari $A(4, 5, -7)$, $B(3, 2, 2)$, $C(9, -3, 5)$, $D(1, -5, 8)$ nuqtalarda joylashgan piramidaning hajmini toping.
73. $y = \frac{2}{\sqrt{x-5}} + \lg(x-2)$ funksiya aniqlanish sohasini toping.
74. $y = \sqrt{\frac{x^2-1}{x^2+1}}$ funksiya aniqlanish sohasini toping.
75. $y = \arcsin(4-x) + \ln \sqrt{\frac{-x}{1-x}}$ funksiya aniqlanish sohasini toping.
76. $y = \frac{2}{\sqrt{x-5}} + \lg(x-2) + \frac{\sqrt{x-3}}{x-5}$ funksiya aniqlanish sohasini toping.
77. $y = \arccos(1-2x) + \sqrt{\frac{3-x}{1-x}} + \ln(-2x-1)$ funksiya aniqlanish sohasini toping.
78. $y = 2^x + 2^{-x} + x^2$ funksiyaning qiymatlar sohasini toping.
79. $y = 2 \cos x - 3$ funksiyaning qiymatlar sohasini toping.
80. $y = \sqrt{7-x} + 2$ funksiyaning qiymatlar sohasini toping.
81. $y = 2e^{-x^2} + 1$ funksiyaning qiymatlar sohasini toping.
82. $y = \frac{1}{\sqrt{2x^2 - 4x + 3}}$ funksiyaning qiymatlar sohasini toping.
83. $y = \frac{x-1}{x}$ funksiya hosilasini toping.
84. $y = x^2 + \cos x$ funksiya hosilasini toping.
85. $f(x) = 2^{x^2} \sin x^3$ funksiya hosilasini toping.
86. $y = x^3 e^{\operatorname{ctg} 3x}$ funksiyaning hosilasini toping.
87. $y = x^{x^x}$ funksiyaning hosilasini toping.
88. $y = e^{\sin^2(x+\sqrt{x})} \ln(x-1)$ funksiya hosilasini toping.
89. $y = (\sin 2x)^{\cos 4x}$ funksiyaning hosilasini toping.
90. $y = x^{\frac{1}{\ln x}}$ funksiya hosilasini toping.
91. $y = \ln^2(x^4 + 5x^2 + 8)$ funksiya hosilasini toping.
92. $y = \sqrt{1-x^2} + \arcsin x$ funksiya hosilasini toping.

93. $y = x\sqrt{1-x^2} + \arccos x$ funksiya hosilasini toping.

94. $y = x \arctg x + \ln \sqrt{\frac{1+x}{1-x}}$ funksiya hosilasini toping.

95. Funksiyaning hosilasini toping. $y = x^{\sin 2x}$

96. $y = x - \arctg x$ funksiyaning ikkinchi tartibli hosilasini toping.

97. Quyidagi funksiyalarning 2-tartibli hosilalari topilsin

$$y = \arctg \frac{x}{a}; \quad y = \arccos(1-2x)$$

98. $f(x) = 2^{\frac{x}{4-x}}$, $x = 4$ nuqtada berilgan funksiyaning o'ng va chap limitlarini hisoblang.

99. $f(x) = [x]$, $x = 3$ nuqtada berilgan funksiyaning o'ng va chap limitlarini hisoblang.

100. Quyidagi limitni hisoblang: $\lim_{x \rightarrow 0} \frac{1 - \cos^2 x}{3x^2}$.

101. Quyidagi limitni hisoblang: $\lim_{x \rightarrow \infty} (\sqrt{x^2 + 9} - x)$.

102. $\lim_{n \rightarrow \infty} \frac{n! + (n+2)!}{(n-1)! + (n+2)!}$ limitni toping.

103. $\lim_{n \rightarrow \infty} \frac{3+6+9+\dots+3n}{n^2+4}$ funksiya limitini hisoblang.

104. Quyidagi limitni hisoblang: $\lim_{x \rightarrow \infty} \left(1 + \frac{6}{x^2}\right)^{x(x+1)}$.

105. Quyidagi limitni hisoblang: $\lim_{x \rightarrow 0} \frac{\sqrt{1+\sin x} - \sqrt{1-\sin x}}{\tg x}$.

106. Quyidagi limitni hisoblang: $\lim_{x \rightarrow 0} \left(\frac{2-x}{2+x}\right)^{\frac{3}{x}}$

107. Funksiya limitini hisoblang. $\lim_{x \rightarrow \infty} \left(\frac{2x+1}{2x-3}\right)^{4x-1}$

108. Quyidagi limitni hisoblang: $\lim_{x \rightarrow 25} \frac{\sin(\sqrt{x}-5)}{x-25}$

109. Quyidagi limitni hisoblang: $\lim_{n \rightarrow \infty} \left(\frac{n-4}{n}\right)^{n+1}$

110. Limitni toping: a) $\lim_{x \rightarrow 3} \frac{x^2 - x - 6}{3 - x}$;

111. Quyidagi limitni hisoblang: $\lim_{x \rightarrow 1} \frac{x^{50}-1}{x^{25}-1}$.

112. Limitni toping. a) $\lim_{n \rightarrow \infty} \frac{(2n+1)! + (2n+2)!}{(2n+3)! - (2n+2)!}$;

113. Integralni toping. $\int \sin^3 x \operatorname{tg}^2 x dx$.
114. $\int \frac{dx}{x(1 + \ln^2 x)}$ Integralni hisoblang.
115. $\int \frac{3x^2 - 4x}{x^3 - 2x^2 + 4} dx$ aniqmas integralni hisoblang.
116. $\int \frac{dx}{\sin^2 x \cos^2 x}$ integralni hisoblang.
117. Aniqmas integralni hisoblang $\int 3xe^{3x} dx$
118. $\int \frac{\cos 2x}{\cos^2 x \sin^2 x} dx$ integralni hisoblang.
119. $\int \operatorname{tg}^2 x dx$ integralni hisoblang.
120. $\int \left(\frac{2}{\sqrt{1-x^2}} + \frac{3}{x^2+1} \right) dx$ integralni hisoblang.
121. $\int x^2 \sqrt{x^3 - 5} dx$ integralni hisoblang.
122. $y = x \ln x$ funksiyani monotonlikka tekshiring.
123. $y = \frac{1 + \ln x}{x}$ funksiyani monotonlikka tekshiring.

Mustaqil ta'lim mavzulari yuzasidan savollar:

1. Vektorlar ustida chiziqli amallar.
2. Vektorning skalyar ko'paytmasi tatbiqlarini keltiring.
3. Vektorning vektor ko'paytmasi tatbiqlarini keltiring.
4. Vektorning aralash ko'paytmasi tatbiqlarini keltiring.
5. Tekislikda ikki to'g'ri chiziqlarning parallellik va perpendikulyarlik shartlarini keltirib chiqaring.
6. Tekislikda nuqtadan to'g'ri chiziqgacha bo'lgan masofani topish formulasi
7. Sonlar ketma-ketligi va uning limiti.
8. Kamayuvchi bo'lib quyidan chegaralangan va o'suvchi bo'lib yuqoridan chegaralangan ketma-ketliklarga misol keltiring.
9. Chegaralanmagan ketma-ketliklar.
10. Chegaralangan va monoton ketma-ketliklar.
11. Funksiya tushunchasi va uning berilish usullari.
12. Funksiyaning aniqlanish va qiymatlar sohasi.
13. Funksiyaning monotonligi.
14. Juft va toq funksiyalar.
15. O'suvchi bo'lib yuqoridan chegaralangan va kamayuvchi bo'lib quyidan chegaralangan funksiyalarga misol keltiring

16. Roll teoremasi (hosilaning noli haqida)
17. Lagranj teoremasi (chekli orttirmalar haqidagi teorema)
18. Parametr orqali beriladigan funksiyalar va ularning hosilalari.
19. Teylor formulasi.
20. Teylor formulasining xususiy hollari.
21. O'suvchi bo'lib yuqoridan chegaralangan va kamayuvchi bo'lib quyidan chegaralangan funksiyalarga misol keltiring

Misollar.

22. Tenglamalar sistemasini Kramer usuli yordamida yeching:

$$\begin{cases} 2x - y + 2z = 0, \\ 4x + y + 4z = 6, \\ x + y + 2z = 4. \end{cases}$$

23. Determinantni hisoblang:

$$\begin{vmatrix} -4 & 1 & 2 & 0 \\ 2 & -1 & 2 & 3 \\ -3 & 0 & 1 & 1 \\ 2 & 1 & -2 & 3 \end{vmatrix}$$

24. Determinantni 2-satr elementlari bo'yicha yoyib hisoblang:

$$\begin{vmatrix} 2 & -1 & -3 \\ 3 & 4 & -5 \\ 0 & 2 & 7 \end{vmatrix}$$

25. Chiziqli tenglamalar sistemasini Kramer formulasi yordamida yeching:

$$\begin{cases} x_1 - 2x_2 + 3x_3 = 14, \\ 2x_1 + 3x_2 - 4x_3 = -16, \\ 3x_1 - 2x_2 - 5x_3 = -8. \end{cases}$$

26. $A = \begin{pmatrix} 2 & 3 & -1 \\ 1 & 0 & 3 \end{pmatrix}$, $B = \begin{pmatrix} 1 & 0 & 1 \\ 3 & 2 & -1 \end{pmatrix}$ matritsalar berilgan. $3A - 2B$ ni toping.

27. Determinantni 3-ustun elementlari bo'yicha yoyib hisoblang:

$$\begin{vmatrix} 2 & -1 & -3 \\ 3 & 4 & -5 \\ 0 & 2 & 7 \end{vmatrix}$$

28. A va B matritsalarining ko'paytmasini toping:

$$A = \begin{pmatrix} 2 & -3 & 1 & -2 \\ 1 & -1 & -1 & 0 \end{pmatrix}, \quad B = \begin{pmatrix} 3 & 1 \\ -1 & 2 \\ 1 & 1 \\ 2 & 4 \end{pmatrix}$$

29. Chiziqli tenglamalar sistemasini Kramer formulasi yordamida yeching:

$$\begin{cases} 3x_1 - 2x_2 + 4x_3 = 21, \\ 3x_1 + 4x_2 - 2x_3 = 9, \\ 2x_1 - x_2 - x_3 = 10. \end{cases}$$

30. Chiziqli tenglamalar sistemasini Kramer formulasi yordamida yeching:

$$\begin{cases} 2x_1 + x_2 - x_3 = 2, \\ 2x_1 + 2x_2 - 3x_3 = -3, \\ x_1 + 2x_2 - 2x_3 = -5. \end{cases}$$

31. Chiziqli tenglamalar sistemasini Gauss usulida yeching:

$$\begin{cases} 3x_1 + 2x_2 + x_3 = 6, \\ 2x_1 + x_2 + 3x_3 = 7, \\ 2x_1 + 3x_2 + x_3 = 1. \end{cases}$$

32. Tenglamani yeching:
$$\begin{vmatrix} 6 & 3+x & 2 \\ 5 & 0 & 1 \\ -4 & 1 & -1 \end{vmatrix} = 0$$

33. Tenglamalar sistemasini yeching:
$$\begin{cases} 3x + 2y - z = -1 \\ x - y + 2z = 6 \\ 2x + y - 3z = -5 \end{cases}$$

34. $A = \begin{pmatrix} 5 & 8 & 0 \\ 7 & 3 & 1 \\ 6 & 2 & -4 \end{pmatrix}$ $\det A = ?$

35. Tenglamalar sistemasini Gauss usuli yordamida yeching
$$\begin{cases} x - 3y + z = 1, \\ 2x + y - z = 6, \\ 5x - 4y - 7z = 4. \end{cases}$$

36. $\vec{a} = \{1; -2; 2\}$ $\vec{b} = \{2; 4; -5\}$. vektorlar berilgan bo'lsa $(3\vec{a} - 2\vec{b})(\vec{a} + \vec{b})$ toping.

37. $\vec{a} = \{1; -2; 5\}$ $\vec{b} = \{0; 5; -7\}$. vektorlardan qurilgan uchburchakning yuzini toping.

38. $|\vec{a}| = 6$ $|\vec{b}| = 4$ $\varphi(\vec{a}, \vec{b}) = \frac{2\pi}{3}$ vektorlar berilgan bo'lsa $(2\vec{a} - 3\vec{b})(\vec{a} - 2\vec{b})$ toping.

39. Oxz va Oyz burchaklarning bissektirisalari qanday burchak ostida kisishadi.

40. $\vec{a} = \{-1; 2; 3\}$ $\vec{b} = \{2; -1; 3\}$. vektorlar berilgan bo'lsa $(2\vec{a} + \vec{b}) \times (-\vec{a} + 3\vec{b})$ toping.

41. $\vec{a} = \{3; 4; 0\}$, $\vec{b} = \{0; -3; 1\}$, $\vec{c} = \{0; 2; 5\}$ vektorlardan qurilgan parallelepipedning hajmini toping.

42. $\vec{a} = \{1; -2; 1\}$, $\vec{b} = \{3; 2; 1\}$, $\vec{c} = \{-1; 0; 1\}$ vektorlardan qurilgan piramidaning hajmini toping.

43. $|\vec{a}| = 6$ $|\vec{b}| = 4$ $\varphi(\vec{a}, \vec{b}) = \frac{5\pi}{6}$ vektorlar berilgan bo'lsa $|(2\vec{a} - 3\vec{b}) \times (\vec{a} - 2\vec{b})|$ toping.

44. $\vec{a} = 4\vec{i} - 2\vec{j} - 3\vec{k}$ va $\vec{b} = \vec{j} + 3\vec{k}$ vektorlarga qurilgan parallelogram yuzasini hisoblang.

45. $A(4; 6; 3)$, $B(-5; 2; 6)$, $C(4; -4; -3)$ nuqtalar berilgan. $\overrightarrow{AB}$ va $\overrightarrow{AC}$ vektorlarga qurilgan parallelogramning yuzini hisoblang.

46. Quyidagi limitni Lopital qoidasiga asosan hisoblang: $\lim_{x \rightarrow 0} \operatorname{tg} x \cdot \ln x$.

47. $\lim_{x \rightarrow -1} (1 - 3x) = 4$ ekanligini limit ta'rifi yordamida ko'rsating.

48. $\lim_{x \rightarrow 1} (5x^2 - 3) = 2$ ekanligini limit ta'rifi yordamida ko'rsating.

49. $\lim_{n \rightarrow \infty} (4 + \frac{3}{n}) = 4$ ekanligini limit ta'rifi yordamida ko'rsating.

50. $f(x) = 3^{\frac{1}{x-1}}$ funksiyaning uzilish nuqtalarining turini aniqlang.

51. $y = \sin x$ funksiya hosilasini hosila ta'rifiga asosan toping.

52. $y = \operatorname{ctg} 2x$ funksiya hosilasini hosila ta'rifiga asosan, toping.

53. $f(x) = 2x^2$ funksiya hosilasini hosila ta'rifiga asosan, toping.

54. $y = e^x$ funksiya hosilasini hosila ta'rifiga asosan, toping.

55. $y = (x^2 + 1)^{\operatorname{ctg} 2x}$ funksiyaning differensialini toping.

56. $y = x^5 e^x$ funksiyaning ikkinchi tartibli hosilasini toping.

57. $\int e^{4-5x^2} x dx$ Integralni hisoblang.

58. $\int \left(\frac{1}{x^2 + 3} + \frac{1}{\sqrt{4 - x^2}} \right) dx$ integralni hisoblang.

59. $\int \frac{1 + 2x^2}{x^2(1 + x^2)} dx$ aniqmas integralni hisoblang.

60. $\int \frac{\cos x dx}{\sin^2 x - 4 \sin x + 5}$. Integralni toping.

61. Integralni hisoblang $\int \frac{\sqrt{\operatorname{ctg} 7x}}{\sin^2 7x} dx$.

62. Aniqmas integralni toping. $\int \frac{e^{3x}}{4 - e^{6x}} dx$.

63. $\int \frac{\sin 3x}{\cos^2 3x} dx$ aniqmas integralni hisoblang.

64. $\int e^x \sin x dx$ aniqmas integralni hisoblang.

65. Aniqmas integralni hisoblang. $\int x^2 \cos 2x dx$

66. Lopital qoidasidan foydalanmasdan limitni hisoblang: $\lim_{x \rightarrow 0} \frac{\sqrt[3]{27+x} - \sqrt[3]{27-x}}{\sqrt[3]{8+x} - \sqrt[3]{8-x}}$

67. $\int (5e^x + \sqrt[3]{x^2}) dx$ integralni hisoblang.

68. $\int \frac{(x^2 - 1)^2}{x} dx$ integralni hisoblang.

69. Ushbu $f(x) = \sin x$ funksiya uchun $[0; 2\pi]$ segmentda Roll teoremasining shartlari bajariladimi?

70. $f(x) = e^x$ funksiya $[0; 2\pi]$ segmentda Koshi teoremasining shartlarini qanoatlantiradimi?

71. $g(x) = \frac{x^2}{1+x^2}$ funksiya $[0; 2\pi]$ segmentda Koshi teoremasining shartlarini qanoatlantiradimi?

72. $f(x) = x(x^2 - 1)$ funksiya uchun $[0, 1]$ segmentda Roll teoremasining shartlarini tekshiring.

73. $f(x) = \begin{cases} x \sin \frac{1}{x}, & \text{agar } x \neq 0 \text{ bo'lsa,} \\ 0, & \text{agar } x = 0 \text{ bo'lsa} \end{cases}$ funksiya uchun $[-1; 1]$ oraliqda Lagranj teoremasi o'rinlimi?

74. $[1; 4]$ segmentda $f(x) = \sqrt{x}$ funksiya uchun Lagranj formulasi yozilsin va c topilsin.

75. $f(x) = x^3$ va $g(x) = x^2$ funksiyalar uchun Koshining $\frac{f(b) - f(a)}{g(b) - g(a)} = \frac{f'(c)}{g'(c)}$ formulasi yozilsin hamda c topilsin.

76. $f(x) = x^3$ funksiya uchun Lagranjning $f(b) - f(a) = (b - a)f'(c)$ formulasi yozilsin va c topilsin.

77. $y = x^2(1 - x)$ funksiyaning ekstremumlarini toping.

78. $f(x) = \frac{1}{1-x^2}$ funksiyalar grafiglarining qavariqlik va botiqlik oraliqlarini hamda egilish nuqtalarini toping.

79. $y = 2 + \frac{12}{x^2 - 4}$ funksiyalar grafiglarining qavariqlik va botiqlik oraliqlarini hamda egilish nuqtalarini toping.

80. $y = \frac{1}{1+x^2}$ funksiyaning ekstremumlarini toping.

81. $y = \frac{x}{2} + \frac{2}{x}$ funksiyaning ekstremumlarini toping.