

Toshkent davlat iqtisodiyot universiteti Samarqand filiali 1-bosqich Qo'shma ta'lim (60610100-Axborot tizimlari va texnologiyalari (raqamli boshqaruv va barqaror rivojlanish)-2025, 60410100 - Iqtisodiyot (KPT/JPS (FA0795)07/22 Biznesni boshqarish)-2025)shakli talabalari uchun "Matematika 1" fanidan

Yakuniy 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 chiziqlarning 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. Funksiya uzluksizligi.
26. Funksiya uzilishi va uzulish turlari.
27. 1-va 2-ajoyib limitlar.
28. Funksiya hosilasi.
29. Hosilaning ta'rifi.
30. Hosila hisoblash qoidalari.
31. Elementar funksiyalarning hosilalari jadvali.
32. Funksiya ko'paytmasining va bo'linmasining hosilasi.
33. Murakkab funksiyaning hosilasi.
34. Hosilaning mexanik manosi.
35. Funksiyaning yuqori tartibli hosilalari.
36. Funksiya defferensial.
37. Defferensial hisobning asosiy teoremlari.

Matritsalarini qo'shish ($A + B$)

$$1. A = \begin{pmatrix} 1 & 2 \\ 3 & 4 \end{pmatrix}, B = \begin{pmatrix} 5 & 6 \\ 7 & 8 \end{pmatrix}$$

$$2. A = \begin{pmatrix} -1 & 0 \\ 4 & 5 \end{pmatrix}, B = \begin{pmatrix} 3 & 2 \\ -1 & 4 \end{pmatrix}$$

$$3. A = \begin{pmatrix} 10 & -2 \\ 6 & 1 \end{pmatrix}, B = \begin{pmatrix} -5 & 3 \\ 2 & 8 \end{pmatrix}$$

$$4. A = \begin{pmatrix} 0.5 & 1.2 \\ 3 & 0 \end{pmatrix}, B = \begin{pmatrix} 1.5 & 0.8 \\ -2 & 4 \end{pmatrix}$$

$$5. A = \begin{pmatrix} 1 & 2 & 3 \\ 0 & 1 & 4 \end{pmatrix}, B = \begin{pmatrix} 4 & 5 & 6 \\ 1 & 0 & -2 \end{pmatrix}$$

$$6. A = \begin{pmatrix} -3 & 7 \\ 2 & 1 \\ 0 & 4 \end{pmatrix}, B = \begin{pmatrix} 5 & -2 \\ 1 & 3 \\ 4 & -4 \end{pmatrix}$$

$$7. A = \begin{pmatrix} 8 & 12 \\ -4 & 0 \end{pmatrix}, B = \begin{pmatrix} 2 & -3 \\ 5 & 10 \end{pmatrix}$$

$$8. A = \begin{pmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{pmatrix}, B = \begin{pmatrix} 2 & 3 & 4 \\ 5 & 6 & 7 \\ 8 & 9 & 0 \end{pmatrix}$$

$$9. A = \begin{pmatrix} -1 & -2 \\ -3 & -4 \end{pmatrix}, B = \begin{pmatrix} 1 & 2 \\ 3 & 4 \end{pmatrix}$$

$$10. A = \begin{pmatrix} 7 & 0 \\ 11 & -3 \end{pmatrix}, B = \begin{pmatrix} -2 & 5 \\ 4 & 6 \end{pmatrix}$$

Matritsalarini ayirish ($A - B$)

$$1. A = \begin{pmatrix} 5 & 8 \\ 3 & 2 \end{pmatrix}, B = \begin{pmatrix} 1 & 4 \\ 2 & 0 \end{pmatrix}$$

$$2. A = \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}, B = \begin{pmatrix} 5 & -2 \\ 3 & 4 \end{pmatrix}$$

$$3. A = \begin{pmatrix} -2 & 6 \\ 10 & -3 \end{pmatrix}, B = \begin{pmatrix} 4 & -1 \\ 5 & 2 \end{pmatrix}$$

$$4. A = \begin{pmatrix} 12 & 15 \\ 7 & 9 \end{pmatrix}, B = \begin{pmatrix} 10 & 12 \\ 5 & 8 \end{pmatrix}$$

$$5. A = \begin{pmatrix} 0 & -5 \\ 4 & 1 \end{pmatrix}, B = \begin{pmatrix} -3 & 2 \\ 6 & -4 \end{pmatrix}$$

$$6. A = \begin{pmatrix} 3 & 2 & 1 \\ 4 & 5 & 6 \end{pmatrix}, B = \begin{pmatrix} 1 & 1 & 1 \\ 2 & 2 & 2 \end{pmatrix}$$

$$7. A = \begin{pmatrix} 8 & 4 \\ 12 & 6 \end{pmatrix}, B = \begin{pmatrix} 8 & 4 \\ 12 & 6 \end{pmatrix}$$

$$8. A = \begin{pmatrix} -1 & -1 \\ -1 & -1 \end{pmatrix}, B = \begin{pmatrix} -5 & 2 \\ 3 & -4 \end{pmatrix}$$

$$9. A = \begin{pmatrix} 10 & 20 \\ 30 & 40 \end{pmatrix}, B = \begin{pmatrix} 5 & 10 \\ 15 & 20 \end{pmatrix}$$

$$10. A = \begin{pmatrix} 1 & 5 \\ -2 & 7 \end{pmatrix}, B = \begin{pmatrix} 0 & 3 \\ 4 & -1 \end{pmatrix}$$

Matritsani songa ko'paytirish ($k \cdot A$)

$$1. \quad k=2, A=\begin{pmatrix} 1 & -2 \\ 3 & 5 \end{pmatrix}$$

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

$$3. \quad k=0.5, A=\begin{pmatrix} 10 & 4 \\ -6 & 2 \end{pmatrix}$$

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

$$5. \quad k=-1, A=\begin{pmatrix} 5 & -7 \\ 2 & 10 \end{pmatrix}$$

$$6. \quad k=10, A=\begin{pmatrix} 0.2 & 0.5 \\ -1.1 & 3 \end{pmatrix}$$

$$7. \quad k=3, A=\begin{pmatrix} 1 & 2 \\ 3 & 4 \\ 5 & 6 \end{pmatrix}$$

$$8. \quad k=0, A=\begin{pmatrix} 12 & 45 \\ -3 & 18 \end{pmatrix}$$

$$9. \quad k=-2, A=\begin{pmatrix} -4 & 5 \\ 2 & -1 \end{pmatrix}$$

$$10. \quad k=5, A=\begin{pmatrix} 1 & 2 & 0 \\ 0 & 1 & 2 \\ 2 & 0 & 1 \end{pmatrix}$$

3-tartibli determinantni hisoblash

$$1. \quad \begin{vmatrix} 1 & 2 & 3 \\ 0 & 4 & 5 \\ 0 & 0 & 6 \end{vmatrix}$$

$$2. \quad \begin{vmatrix} 1 & 0 & 0 \\ 2 & 3 & 0 \\ 4 & 5 & 6 \end{vmatrix}$$

$$3. \quad \begin{vmatrix} 1 & 1 & 1 \\ 1 & 2 & 3 \\ 1 & 3 & 6 \end{vmatrix}$$

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

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

$$6. \begin{vmatrix} 1 & 2 & 1 \\ 2 & 1 & 2 \\ 1 & 1 & 1 \end{vmatrix}$$

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

$$8. \begin{vmatrix} -1 & 2 & 3 \\ 0 & -2 & 1 \\ 4 & 1 & 5 \end{vmatrix}$$

$$9. \begin{vmatrix} 2 & 2 & 2 \\ 3 & 3 & 3 \\ 1 & 4 & 5 \end{vmatrix}$$

$$10. \begin{vmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{vmatrix}$$

Vektorlarning algebraik yig'indisi va ayirmasi

1. $\vec{a} = (1, 2, 3)$ va $\vec{b} = (4, 5, 6)$. $\vec{a} + \vec{b}$ ni toping.
2. $\vec{a} = (5, -1, 2)$ va $\vec{b} = (-3, 4, 0)$. $\vec{a} + \vec{b}$ ni toping.
3. $\vec{a} = (10, 0, -5)$ va $\vec{b} = (2, 3, 4)$. $\vec{a} - \vec{b}$ ni toping.
4. $\vec{a} = (1, 1, 1)$ va $\vec{b} = (-1, -1, -1)$. $\vec{a} + \vec{b}$ ni toping.
5. $\vec{a} = (3, 4, 5)$ bo'lsa, $2\vec{a}$ vektorni toping.
6. $\vec{a} = (2, -3, 1)$ va $\vec{b} = (1, 2, -1)$. $2\vec{a} + 3\vec{b}$ ni hisoblang.
7. $\vec{a} = (8, 6, 4)$ va $\vec{b} = (5, 5, 5)$. $\vec{a} - 2\vec{b}$ ni toping.
8. $\vec{a} = \vec{i} + 2\vec{j} + 3\vec{k}$ va $\vec{b} = 2\vec{i} - \vec{j} + \vec{k}$. $\vec{a} + \vec{b}$ ni toping.

9. $\vec{a} = (0, 4, -2)$ va $\vec{b} = (3, -1, 5)$. $3\vec{a} - \vec{b}$ ni toping.

10. $\vec{a} = (7, 2, 1)$ va $\vec{b} = (1, 2, 7)$. $\vec{b} - \vec{a}$ ni toping.

CHiziqli tenglamalar sistemasiga oid

1. Tenglamalar sistemasini matritsa usuli yordamida yeching.

$$\begin{cases} 2x_1 + 3x_2 + 4x_2 = 1 \\ x_1 + 2x_2 + 3x_1 = 0 \\ 3x_1 - 4x_2 + 6x_2 = 1 \end{cases}$$

2. Tenglamalar sistemasini Kramer usuli yordamida yeching.

$$\begin{cases} 3x_1 + 2x_2 + x_3 = 5 \\ 2x_1 + 3x_2 + x_3 = 1 \\ 2x_1 + x_2 + 3x_3 = 11 \end{cases}$$

3. Tenglamalar sistemasini Kramer usuli yordamida yeching:

$$\begin{cases} x_1 - 2x_2 + 3x_3 = 6 \\ 2x_1 - 3x_2 - 4x_3 = 20 \\ 3x_1 - 2x_2 - 5x_3 = 6 \end{cases}$$

4. Tenglamani yeching:

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

5. Tenglamalar sistemasini Kramer usuli yordamida yeching:

$$\begin{cases} 2x_1 + x_2 = 3 \\ 3x_1 + 4x_3 = -1 \\ x_1 - x_2 + 2x_3 = -2 \end{cases}$$

6. Tenglamalar sistemasini Kramer usuli yordamida yeching:

$$\begin{cases} 2x_1 + 3x_3 = 4 \\ 4x_1 + x_2 = 6 \\ 2x_1 - x_2 - 2x_3 = 0 \end{cases}$$

7. Tenglamalar sistemasini Kramer usuli yordamida yeching:

$$\begin{cases} 3x_1 + x_2 + 3x_3 = 2 \\ 5x_1 - 2x_2 + 2x_3 = 1 \\ 2x_1 + 2x_2 + 3x_3 = 1 \end{cases}$$

Vektorlarning algebraik yig'indisi va ayirmasi

11. $\vec{a} = (1, 2, 3)$ va $\vec{b} = (4, 5, 6)$. $\vec{a} + \vec{b}$ ni toping.
12. $\vec{a} = (5, -1, 2)$ va $\vec{b} = (-3, 4, 0)$. $\vec{a} + \vec{b}$ ni toping.
13. $\vec{a} = (10, 0, -5)$ va $\vec{b} = (2, 3, 4)$. $\vec{a} - \vec{b}$ ni toping.
14. $\vec{a} = (1, 1, 1)$ va $\vec{b} = (-1, -1, -1)$. $\vec{a} + \vec{b}$ ni toping.
15. $\vec{a} = (3, 4, 5)$ bo'lsa, $2\vec{a}$ vektorni toping.
16. $\vec{a} = (2, -3, 1)$ va $\vec{b} = (1, 2, -1)$. $2\vec{a} + 3\vec{b}$ ni hisoblang.
17. $\vec{a} = (8, 6, 4)$ va $\vec{b} = (5, 5, 5)$. $\vec{a} - 2\vec{b}$ ni toping.
18. $\vec{a} = \vec{i} + 2\vec{j} + 3\vec{k}$ va $\vec{b} = 2\vec{i} - \vec{j} + \vec{k}$. $\vec{a} + \vec{b}$ ni toping.
19. $\vec{a} = (0, 4, -2)$ va $\vec{b} = (3, -1, 5)$. $3\vec{a} - \vec{b}$ ni toping.
20. $\vec{a} = (7, 2, 1)$ va $\vec{b} = (1, 2, 7)$. $\vec{b} - \vec{a}$ ni toping

Funksiya limiti va hosilasiga oid misollar

1. Berilgan funksiyaning y' hosilasini toping: $y = \frac{\sin x}{\cos^2 x}$
2. Berilgan funksiyaning y' hosilasini toping: $y = x^4 \cdot 4^x$
3. Berilgan funksiyaning y' hosilasini toping: $y = \frac{1}{2} \operatorname{arctg} \frac{e^x - 3}{2}$
4. Berilgan funksiyaning y' hosilasini toping: $y = (2x - 1)\sqrt{x^2 - 1}$
5. Berilgan funksiyaning y' hosilasini toping: $y = \operatorname{tg}(\operatorname{ctg} x)$
6. Berilgan funksiyaning y' hosilasini toping: $y = \ln(x^2 + \sin 2x)$
7. Berilgan funksiyaning y' hosilasini toping: $y = \frac{\sin 4x}{4x}$
8. Berilgan funksiyaning y' hosilasini toping: $y = \ln(\ln x^2)$
9. Berilgan funksiyaning y' hosilasini toping: $y = 2^x \ln x$
10. Berilgan funksiyaning y' hosilasini toping: $y = \frac{1}{3} \operatorname{tg} 3x - \sin^2 x$

11. Berilgan funksiyaning y' hosilasini toping: $y = x^5 - 4\sqrt{x^3} + 2\ln 4x - 2$

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

13. Quyidagi limitni hisoblang: $\lim_{x \rightarrow \infty} \frac{8x^9 - 9x^3 + 3}{4x^9 + x^6 - x^2}$.

14. Quyidagi limitni hisoblang: $\lim_{x \rightarrow 1} \frac{\sqrt{x+3} - \sqrt{5-x}}{x^2 + 5x - 6}$

15. Quyidagi limitni hisoblang: $\lim_{x \rightarrow 0} \frac{\operatorname{tg} 2x - \sin 2x}{x^3}$

16. Quyidagi limitni hisoblang: $\lim_{x \rightarrow \infty} (4x - 1)[\ln(2x - 3) - \ln 2x]$.

17. Quyidagi limitni hisoblang: $\lim_{x \rightarrow \infty} \frac{5x^4 - 1}{x^4 + 3x^2 + 4}$

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

19. Quyidagi limitni hisoblang: $\lim_{x \rightarrow \infty} \frac{x^8 - x^7 + 1}{5x^8 + 7x^7 + x^6}$

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

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. O'suvchi bo'lib yuqoridan chegaralangan va kamayuvchi bo'lib quyidan chegaralangan funksiyalarga misol keltiring

Kompleks sonlarni qo'shish ($z_1 + z_2$)

1. $z_1 = 2 + 3i, z_2 = 4 + 5i$
2. $z_1 = 5 - 2i, z_2 = 1 + 6i$
3. $z_1 = -3 + 4i, z_2 = 3 - 4i$
4. $z_1 = 10 + i, z_2 = -5 + 2i$
5. $z_1 = 0 + 2i, z_2 = 7 + 0i$
6. $z_1 = 1.5 + 2.5i, z_2 = 0.5 - 1.5i$
7. $z_1 = -1 - i, z_2 = -2 - 3i$
8. $z_1 = 8 + 6i, z_2 = -2 + 4i$

9. $z_1 = 4 + 7i, z_2 = 2 - 9i$

10. $z_1 = 12 - 5i, z_2 = 3 + 8i$

Kompleks sonlarni ayirish ($z_1 - z_2$)

1. $z_1 = 5 + 7i, z_2 = 2 + 3i$

2. $z_1 = 3 - 4i, z_2 = 1 + 2i$

3. $z_1 = 10 + 2i, z_2 = 12 - 5i$

4. $z_1 = -2 + 6i, z_2 = -2 + 4i$

5. $z_1 = 0 + 5i, z_2 = 3 - 2i$

6. $z_1 = 8 + i, z_2 = 8 + i$

7. $z_1 = -5 - 3i, z_2 = 2 - 4i$

8. $z_1 = 1 + i, z_2 = 1 - i$

9. $z_1 = 4 + 0i, z_2 = 0 + 3i$

10. $z_1 = 15 - 10i, z_2 = 5 + 5i$

Kompleks sonlarni ko'paytirish ($z_1 \cdot z_2$)

1. $z_1 = 2 + i, z_2 = 3 + 2i$

2. $z_1 = 1 - i, z_2 = 1 + i$

3. $z_1 = 3 + 4i, z_2 = 2 - i$

4. $z_1 = -2 + 3i, z_2 = 4 + i$

5. $z_1 = 5i, z_2 = 2 - 3i$

6. $z_1 = 1 + 2i, z_2 = 1 + 2i$

7. $z_1 = 4 - 2i, z_2 = -1 + 3i$

8. $z_1 = 2 + 5i, z_2 = 2 - 5i$

9. $z_1 = 0 + 2i, z_2 = 0 + 3i$

10. $z_1 = 1 + 3i, z_2 = 2 + 4i$

Kompleks sonlarni bo'lish (z_1 / z_2)

1. $z_1 = 1, z_2 = 1 + i$
2. $z_1 = 2 + 4i, z_2 = 2$
3. $z_1 = 5 + 5i, z_2 = 1 - i$
4. $z_1 = 3 - i, z_2 = 3 + i$
5. $z_1 = 1 + 2i, z_2 = 2 - i$
6. $z_1 = 10, z_2 = 3 + i$
7. $z_1 = i, z_2 = 1 + i$
8. $z_1 = 4 + 2i, z_2 = 1 + i$
9. $z_1 = 2 - 3i, z_2 = i$
10. $z_1 = 5 + 2i, z_2 = 3 - 4i$

Vektorlarning skalyar ko'paytmasi ($\vec{a} \cdot \vec{b}$)

Qoida: $\vec{a} \cdot \vec{b} = x_1x_2 + y_1y_2 + z_1z_2$. *Natija - son.*

1. $\vec{a} = (1, 2, 3)$ va $\vec{b} = (4, -1, 2)$. Skalyar ko'paytmani toping.
2. $\vec{a} = (5, 0, 1)$ va $\vec{b} = (2, 3, -4)$. $\vec{a} \cdot \vec{b}$ ni hisoblang.
3. $\vec{a} = (-2, 4, 1)$ va $\vec{b} = (1, 2, 3)$. Skalyar ko'paytmani toping.
4. $\vec{a} = (1, 1, 0)$ va $\vec{b} = (0, 1, 1)$. $\vec{a} \cdot \vec{b}$ ni toping.
5. $\vec{a} = (3, -2, 4)$ va $\vec{b} = (2, 3, 0)$. Vektorlar perpendikulyarmi? (Ko'paytma 0 chiqsa).
6. $|\vec{a}| = 3, |\vec{b}| = 4$ va ular orasidagi burchak $\alpha = 60^\circ$. $\vec{a} \cdot \vec{b}$ ni toping.
7. $\vec{a} = (2, 2, 2)$ va $\vec{b} = (-1, -1, -1)$. $\vec{a} \cdot \vec{b}$ ni toping.
8. $\vec{a} = \vec{i} + \vec{j}$ va $\vec{b} = \vec{j} - \vec{k}$. Skalyar ko'paytmani hisoblang.
9. $\vec{a} = (4, 5, 6)$ va $\vec{b} = (0, 0, 0)$. $\vec{a} \cdot \vec{b}$ ni toping.
10. $\vec{a} = (1, 2, -3)$ bo'lsa, $\vec{a}^2$ (ya'ni $\vec{a} \cdot \vec{a}$) ni hisoblang

Vektor ko'paytmasi ($\vec{a} \times \vec{b}$)

1. $\vec{a} = (1, 0, 0)$ va $\vec{b} = (0, 1, 0)$. $\vec{a} \times \vec{b}$ ni toping (Javob: $\vec{k}$).
2. $\vec{a} = (2, 3, 1)$ va $\vec{b} = (1, -1, 2)$. Vektor ko'paytmani hisoblang.
3. $\vec{a} = (1, 2, 3)$ va $\vec{b} = (3, 2, 1)$. $\vec{a} \times \vec{b}$ ni toping.
4. $\vec{a} = (5, -2, 1)$ va $\vec{b} = (1, 0, 4)$. $\vec{a} \times \vec{b}$ ni hisoblang.
5. $\vec{a} = (1, 1, 1)$ va $\vec{b} = (2, 2, 2)$. Vektor ko'paytma nima uchun $(0, 0, 0)$ ekanini tushuntiring.
6. $\vec{a} = \vec{i} + \vec{j}$ va $\vec{b} = \vec{k}$. $\vec{a} \times \vec{b}$ ni toping.
7. $\vec{a} = (0, 2, -1)$ va $\vec{b} = (3, 4, 0)$. $\vec{a} \times \vec{b}$ ni toping.
8. $\vec{a} = (4, 1, 2)$ va $\vec{b} = (1, 1, 1)$. Vektor ko'paytmani hisoblang.
9. $\vec{a} = (2, 0, 3)$ va $\vec{b} = (0, 5, 0)$. $\vec{a} \times \vec{b}$ ni toping.
10. $\vec{a} = (-1, -2, -3)$ va $\vec{b} = (1, 2, 3)$. $\vec{a} \times \vec{b}$ ni toping.

Uzluksizlik, funksiya hosilasining tatbiqlari va differensial hisobning asosiy teoremlari bo'limlariga oid misollar

1. $f(x) = 3^{\frac{1}{x-1}}$ funksiyaning uzilish nuqtalarining turini aniqlang.
2. $y = \sin x$ funksiya hosilasini hosila ta'rifiga asosan toping.
3. $y = \operatorname{ctg} 2x$ funksiya hosilasini hosila ta'rifiga asosan, toping.
4. $f(x) = 2x^2$ funksiya hosilasini hosila ta'rifiga asosan, toping.
5. $y = e^x$ funksiya hosilasini hosila ta'rifiga asosan, toping.
6. $y = (x^2 + 1)^{\operatorname{ctg} 2x}$ funksiyaning differensialini toping.
7. $y = x^5 e^x$ funksiyaning ikkinchi tartibli hosilasini toping.
8. Ushbu $f(x) = \sin x$ funksiya uchun $[0; 2\pi]$ segmentda Roll teoremasining shartlari bajariladimi?

9. $f(x)=e^x$ va $g(x)=\sqrt{x}$ funksiya $[0; 2\pi]$ segmentda Koshi teoremasining shartlarini qanoatlantiradimi?
10. $g(x)=\frac{x^2}{1+x^2}$ funksiya $[0; 2\pi]$ segmentda Koshi teoremasining shartlarini qanoatlantiradimi?
11. $f(x)=x^3$ va $f(x)=x(x^2-1)$ funksiya uchun $[0, 1]$ segmentda Roll teoremasining shartlarini tekshiring.
12. $[1; 4]$ segmentda $f(x)=\sqrt{x}$ funksiya uchun Lagranj formulasi yozilsin va c topilsin.
13. $f(x)=x^3$ 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.
14. $f(x)=x^3$ funksiya uchun Lagranjning $f(b)-f(a)=(b-a)f'(c)$ formulasi yozilsin va c topilsin.
15. $y=x^2(1-x)$ funksiyaning ekstremumlarini toping.
16. $f(x)=\frac{1}{1-x^2}$ funksiyalar grafiglarining qavariqlik va botiqlik oraliqlarini hamda egilish nuqtalarini toping.
17. $y=2+\frac{12}{x^2-4}$ funksiyalar grafiglarining qavariqlik va botiqlik oraliqlarini hamda egilish nuqtalarini toping.
18. $y=\frac{1}{1+x^2}$ funksiyaning ekstremumlarini toping.
19. $y=\frac{x}{2}+\frac{2}{x}$ funksiyaning ekstremumlarini toping.