

EDUCATION_UZB

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KINEMATIKA

- XOY tekislikda harakatlanayotgan moddiy nuqtaning harakat qonuni $x=2+t$ va $y=1+2t$ ko'rinishga ega. Moddiy nuqtaning trayektoriya tenglamasini tuzing.
A) $y=2x-3$. B) $y=x-3$.
C) $y=2x+3$. D) $y=x+1$.
- Jismning tekislikdagi harakat tenglamalari $x(t)=at+b$ va $y(t)=ct+d$ ga teng. Bu jismning trayektoriya tenglamasini tuzing.
A) $y=(c/a)x-bc/a$. B) $y=(c/a)x+d$.
C) $y=(c/a)x+bc/a+d$.
D) $y=(c/a)x-bc/a+d$.
- Ikkita jismning harakat tenglamalari $x_1 = 3 - 2t$ [m] va $x_2 = 21 + 15t$ [m] ko'rinishga ega. Ikkinchi jism tezlik modulining birinchi jism tezlik moduliga nisbatini toping.
A) 7,5. B) 7,5. C) -3. D) 3.
- Ikkita jism harakat tenglamasi mos ravishda $x=10-15t$ (m) va $y=30+20t$ (m). Bu jismlarning nisbiy tezligini toping (m/s).
A) 25. B) 35. C) 30. D) 20.
- Avtomobil to'g'ri chiziqli tekis harakatlanmoqda. Vaqt $t=-3$ s bo'lganida koordinatasi $x=900$ m bo'lgan. Agar avtomobil tezligi $v=-15$ m/s bo'lsa, qachon uning koordinatasi nol bo'ladi (s)?
A) 63. B) 60. C) 57. D) 52.
- Avtomobil to'g'ri chiziqli tekis harakatlanmoqda. Vaqt $t=-3$ s bo'lganida koordinatasi $x=-900$ m bo'lgan. Agar avtomobil tezligi $v=15$

m/s bo'lsa, qachon uning koordinatasi nol bo'ladi (s)?

A) 57. B) 63. C) 52. D) 60.

- Dastlabki tezligi 20 m/s bo'lgan avtomobil 50 m yo'l bosib to'xtadi. Agar harakat tekis sekinlanuvchan bo'lsa, bu harakat davomiyligi (s) qanday?
A) 5. B) 6. C) 4. D) 8.
- Zarraning harakati jadval ko'rinishida berilgan. Tezlik va tezlanish ta'rifiga ko'ra zarraning o'rtacha tezlanishini toping (m/s^2).

t (s)	0,7	0,8	0,9
X (m)	1,6	1	-1

A) -140. B) 140. C) 280. D) -280.

- Zarraning harakati jadval ko'rinishida berilgan. Tezlik va tezlanish ta'rifiga ko'ra zarraning o'rtacha tezlanishini toping (cm/s^2).

t (s)	10	11	12
x (m)	1,6	1	-1

A) -140. B) 140. C) 280. D) -280.

- Zarraning harakati jadval ko'rinishida berilgan. Zarraning tezlanishi qanday?

t (s)	0	1	2	3
x (m)	1	0	-1	-2

A) tezlanish o'zgaruvchan.
B) $0,3g$. C) 0. D) $0,15g$.

- Ekvator bo'ylab sharqqa qarab 20 km/h tezlikda kema suzmoqda. Janubi-g'arbdan meridianga nisbatan 30° burchak ostida 20 km/h tezlikda shamol esmoqda. Shamolning kema bilan bog'langan sanoq sistemasidagi tezligini toping (km/h).
A) 20. B) 15. C) 25. D) 30.

12. Ekvator bo'ylab sharqqa qarab 20 km/h tezlikda kema suzmoqda. Janubi-g'arbdan meridianga nisbatan 30° burchak ostida 20 km/h tezlikda shamol esmoqda. Shamolning kema bilan bog'langan sanoq sistemasidagi tezlik vektori meridian bilan qanday burchak tashkil etadi?
A) 60° . B) 30° . C) 40° . D) 15° .

13. Zarraning harakati jadval ko'rinishida berilgan. Tezlik va tezlanish ta'rifiga ko'ra zarraning o'rtacha tezlanishini toping (m/s^2).

t (s)	0,3	0,4	0,5
x (m)	0	-1	1

- A) -140. B) 140. C) 280. D) 300.

14. Zarraning harakat tenglamasi jadval ko'rinishida berildi. Zarraning harakatini tavsiflang?

X, m	0	1	2	3	4
t, s	5	6	8	11	15

- A) tezlanish o'zgaruvchan.
B) tezlanish o'zgarmas.
C) tezlanish nolga teng.
D) tekis harakat.

15. Zarraning harakati jadvalda berilgan. Tezlik va tezlanish ta'rifiga asosan zarraning o'rtacha tezlanishini (m/s^2) toping?

t (s)	1	1,1	1,2
x (m)	0	-2	1

- A) 280. B) 500. C) -75. D) 300.

16. Jism 500 m balandlikdan boshlang'ich tezliksiz pastga tashlandi. Jismning oxirgi sekundda bosib o'tgan yo'lini toping (m).
A) 95. B) 105. C) 85. D) 70.

17. Qanday balandlikdan (m) erkin tashlangan jism oxirgi sekundda 75 m masofani o'tadi?
A) 300. B) 150. C) 320. D) 110.

18. Zarraning harakat tenglamasi jadval ko'rinishida berildi. Zarraning harakatini tavsiflang?

t,s	0	1	2	3	4
x,m	6	7	8	9	10

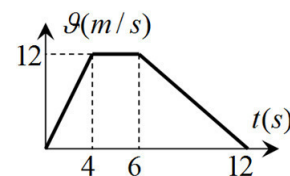
- A) tekis harakat.
B) tezlanish o'zgarmas.
C) tezlik nolga teng.
D) tezlanish o'zgaruvchan.

19. Zarraning harakat tenglamasi jadval ko'rinishida berildi. Zarraning harakatini tavsiflang?

t,s	0	2	4	6	8
x,m	11	13	17	23	31

- A) tekis tezlanuvchan harakat.
B) tezlanish ortuvchi.
C) tezlanish nolga teng.
D) tekis harakat.

20. Rasmda moddiy nuqta tezligining vaqtga bog'liqlik grafiqi tasvirlangan. Vaqt $t=7,3$ s bo'lganda tezlik (m/s) qancha bo'lgan?

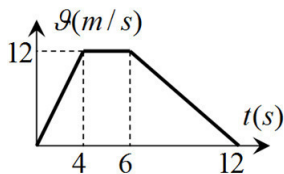


- A) 9,4. B) 10,1. C) 9,8. D) 9,1.

21. Qanday balandlikdan (m) 10 m/s boshlang'ich tezlik bilan tik pastga otilgan jism oxirgi sekundda 35 m masofani o'tadi?
A) 35. B) 25. C) 50. D) 75.

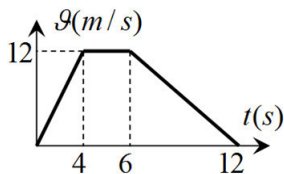
22. 180 m balandlikdan erkin tushayotgan jismning oxirgi sekundda bosib o'tgan yo'li 3-sekundda bosib o'tgan yo'lidan necha marta katta?
A) 2,2 marta. B) 2 marta. C) 3 marta. D) 1,5 marta.

23. Rasmda moddiy nuqta tezligining vaqtga bog'liqlik grafigi tasvirlangan. Vaqt $t=8$ s bo'lganda tezlik (m/s) qancha bo'lgan?



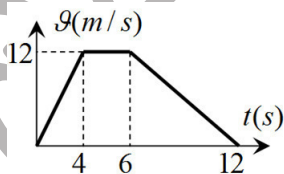
- A) 9,4. B) 10,1. C) 9,8. D) 8.

24. Rasmda moddiy nuqta tezligining vaqtga bog'liqlik grafigi tasvirlangan. Vaqt $t=1$ s bo'lganda tezlik (m/s) qancha bo'lgan?



- A) 9,4. B) 10,1. C) 3. D) 9,1.

25. Rasmda moddiy nuqta tezligining vaqtga bog'liqlik grafigi tasvirlangan. Vaqt $t=5$ s bo'lganda tezlanish (m/s^2) qancha bo'lgan?

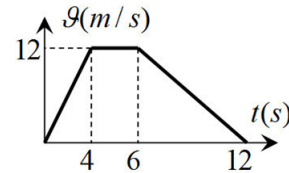


- A) 0. B) 10. C) 11. D) 9.

26. Boshlang'ich tezliksiz pastga erkin tashlangan jism 8-sekundda bosib o'tgan yo'li nechanchi sekundda bosib o'tgan yo'lidan 5 marta katta bo'ladi?
A) 1-sekundda. B) 3-sekundda. C) 2-sekundda. D) 4-sekundda.

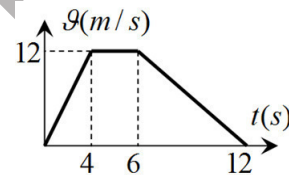
27. Oyda jism tik yuqoriga 1,67 m/s tezlik bilan otildi. Jismning ko'tarilish balandligini toping (sm). $g=1,67$ N/kg.
A) 100. B) 167. C) 10. D) 83,5.

28. Rasmda moddiy nuqta tezligining vaqtga bog'liqlik grafigi tasvirlangan. Vaqt $t=7$ s bo'lganda bosib o'tilgan yo'l (m) qancha bo'lgan?



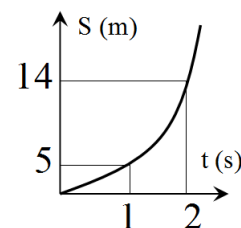
- A) 59. B) 60. C) 40. D) 30.

29. Rasmda moddiy nuqta tezligining vaqtga bog'liqlik grafigi tasvirlangan. Vaqt $t=3$ s bo'lganda bosib o'tilgan yo'l (m) qancha bo'lgan?



- A) 13,5. B) 10,5. C) 10. D) 20.

30. Jism bosib o'tgan yo'lining vaqtga bog'lanish grafigi paraboladan iborat. Jismning boshlang'ich tezligini toping (m/s).



- A) 7. B) 5. C) 4. D) 3.

31. Qanday shartlar bajarilganda moddiy nuqta to'g'ri chiziqli tekis harakatni namoyon etadi? a_n -normal tezlanish, a_τ -tangensial tezlanish.
A) $a_n=0$, $a_\tau=0$. B) $a_n=0$, $a_\tau=const < 0$.

C) $a_n=0$, $a_\tau=const \leq 0$.

D) $a_n=const$, $a_\tau=0$.

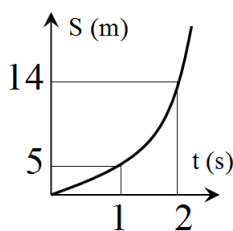
32. Qanday shartlar bajarilganda moddiy nuqta to'g'ri chizikli tekis sekinlanuvchan harakatni namoyon etadi? a_n -normal tezlanish, a_τ -tangensial tezlanish.

A) $a_n=0$, $a_\tau=0$. B) $a_n=0$, $a_\tau=const < 0$.

C) $a_n=0$, $a_\tau=const \leq 0$.

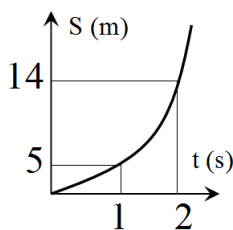
D) $a_n=const$, $a_\tau=0$.

33. Jism bosib o'tgan yo'lining vaqtga bog'lanish grafigi paraboladan iborat. Jismning tezlanishini toping (m/s^2).



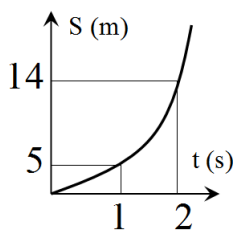
A) 7. B) 5. C) 4. D) 3.

34. Jism bosib o'tgan yo'lining vaqtga bog'lanish grafigi paraboladan iborat. Jismning 3 s dagi ko'chishini toping (m).



A) 25. B) 27. C) 28. D) 30.

35. Jism bosib o'tgan yo'lining vaqtga bog'lanish grafigi paraboladan iborat. Jismning uchinchi sekunddagi ko'chishini toping (m).



A) 13. B) 17. C) 18. D) 15.

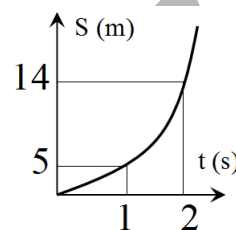
36. Qanday shartlar bajarilganda moddiy nuqta aylana bo'ylab tekis harakatni namoyon etadi? a_n -normal tezlanish, a_τ -tangensial tezlanish.

A) $a_n=0$, $a_\tau=0$. B) $a_n=0$, $a_\tau=const < 0$.

C) $a_n=0$, $a_\tau=const \leq 0$.

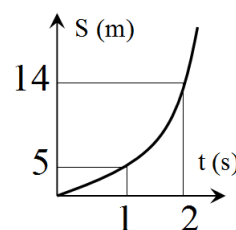
D) $a_n=const$, $a_\tau=0$.

37. Jism bosib o'tgan yo'lining vaqtga bog'lanish grafigi paraboladan iborat. Jismning harakat boshidan 3 s ichidagi o'rtacha tezligini toping (m/s).



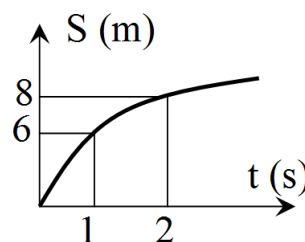
A) 8. B) 7. C) 10. D) 9.

38. Jism bosib o'tgan yo'lining vaqtga bog'lanish grafigi paraboladan iborat. Jismning uchinchi sekunddagi o'rtacha tezligini toping (m/s).



A) 8. B) 7. C) 10. D) 13.

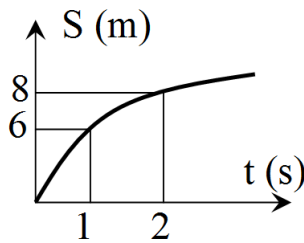
39. Jism bosib o'tgan yo'lining vaqtga bog'lanish grafigi paraboladan iborat. Jismning boshlang'ich tezligini toping (m/s).



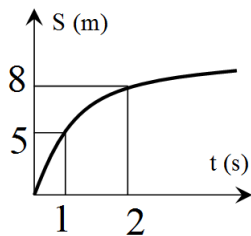
A) 7. B) 5. C) 6. D) 8.

40. Jazoir shahrining geografik koordinatalari 30° shimoliy kenglik, 3° sharqiy uzoqlikdan iborat. Shaharning yer o'qi atrofida aylanma harakat tezligi (m/s) topilsin. Ekvator uzunligi 40 ming km. $T=86400$ s.
A) 401. B) 232. C) 463. D) 327.

41. Jism bosib o'tgan yo'lining vaqtga bog'lanish grafigi paraboladan iborat. Jismning tezlanish modulini toping (m/s^2).



- A) 7. B) 2. C) 4. D) 3.
42. Jism bosib o'tgan yo'lining vaqtga bog'lanish grafigi paraboladan iborat. Jismning harakat boshidan 3 s ichidagi o'rtacha tezligini toping (m/s).



- A) 8. B) 7. C) 10. D) 3.
43. Qandaydir shaharning geografik koordinatalari 60° shimoliy kenglik, 10° sharqiy uzoqlikdan iborat. Shaharning yer o'qi atrofida aylanma harakat tezligi (m/s) topilsin. Ekvator uzunligi 40 ming km. $T=86400$ s.
A) 401. B) 232. C) 463. D) 327.
44. Yerning qaysidir nuqtasining geografik koordinatalari 0° shimoliy kenglik, 10° sharqiy uzoqlikdan iborat. Mazkur nuqtaning yer o'qi atrofida aylanma

harakat tezligi (m/s) topilsin. Ekvator uzunligi 40 ming km. $T=86400$ s.
A) 401. B) 232. C) 463. D) 327.

45. Yuqoriga tik ravishda birin-ketin otilayotgan jismlarning ko'tarilish balandligi 40 m bo'lsa, ular uchrashganda ko'chishlar nisbati nimaga teng?
A) 2. B) 3. C) 1. D) 4.
46. Vertikal yuqoriga 1 s vaqt intervali bilan birday 30 m/s boshlang'ich tezlik bilan otilgan jismlarning uchrashguncha bosib o'tgan yo'llari nisbatini toping.
A) 1,05. B) 2. C) 1,8. D) 1.
47. Vertikal yuqoriga 1 s vaqt intervali bilan birday 30 m/s boshlang'ich tezlik bilan otilgan jismlarning uchrashguncha bosib o'tgan yo'llari farqini toping (m).
A) 2. B) 1,8. C) 1. D) 2,5.
48. Vertikal yuqoriga 1 s vaqt intervali bilan birday 30 m/s boshlang'ich tezlik bilan otilgan jismlarning uchrashgan paytdagi oniy tezliklari nisbatini toping.
A) 1. B) 2. C) 1,8. D) 1,1.
49. Vertikal yuqoriga 2 s vaqt intervali bilan birday 30 m/s boshlang'ich tezlik bilan otilgan jismlarning uchrashgan momentda birinchi va ikkinchi jismlar tezliklarining yuqoriga yo'nalgan proyeksiyasini toping (m/s).
A) -10; 10. B) 10; -10.
C) 18; -18. D) 20; -20.
50. Elastik sharcha H balandlikdan gorizontaal yo'nalishda v tezlik bilan otildi. Sharchaning yer bilan birinchi va ikkinchi marta to'qnashuvlari orasidagi masofani toping.
A) $2v\sqrt{\frac{H}{g}}$. B) $v\sqrt{\frac{2H}{g}}$.
C) $2v\sqrt{\frac{2H}{g}}$. D) $3v\sqrt{\frac{2H}{g}}$.

51. Oyda jism tik erkin tusha boshladi. Jism tezligi 2 m/s ga yetganda qancha masofa o'tgan bo'ladi (m)? $g=1,67 \text{ N/kg}$.
A) 8,35. B) 1,2. C) 1. D) 12.
52. Jism koordinatasi A (1;2;3) bo'lgan nuqtadan koordinatasi B (0;0;0) bo'lgan nuqtaga 6 s davomida, undan keyin esa C (13;5;7) nuqtaga 7 s davomida ko'chdi. Jismning o'rtacha ko'chish tezligi (m/s) qanday? (Koordinatalar sistemasida oraliqlar metrlarda).
A) 1. B) 2. C) 3. D) 4.
53. Jism koordinatasi A (2;3;4) bo'lgan nuqtadan koordinatasi B (2;10;13) bo'lgan nuqtaga 3 s davomida, undan keyin esa C (14;6;8) nuqtaga 10 s davomida ko'chdi. Jismning o'rtacha ko'chish tezligi (m/s) qanday? (Koordinatalar sistemasida oraliqlar metrlarda).
A) 1. B) 2. C) 3. D) 4.
54. Burchak tezlanishi vaqt bo'yicha $\varepsilon = 12\pi - 3\pi t$ qonuniyat bilan o'zgarayotgan jismning burchak tezlanishi nolga teng bo'lgunga qadar vaqtda o'rtacha burchak tezligini toping (rad/s). Jismning boshlang'ich burchak tezligi $10\pi \text{ rad/s}$ ga teng.
A) 29π . B) 24π . C) 27π . D) 26π .
55. Jism to'g'ri chiziq bo'ylab 6 km masofani 24 km/h tezlik bilan bosib o'tdi. So'ngra harakat yo'nalishida tik ravishda 32 km/h tezlik bilan harakatlandi. Butun yo'ldagi o'rtacha tezligi 28 km/h ga teng bo'lsa, uning ko'chishini toping (km).
A) 10. B) 20. C) 15. D) 5.
56. Bino lifti 3-qavatdan 11-qavatga 10 s vaqt davomida ko'tarildi. Lift harakat davomida qanday o'rtacha tezlik bilan harakatlangan (m/s)? Bunda qavatlar o'rtasidagi masofa 3 metr.

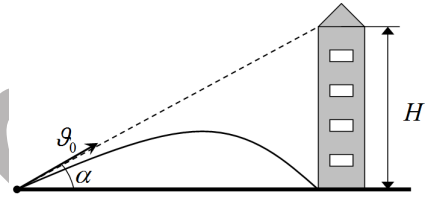
A) 2,4. B) 3. C) 4. D) 2.

57. Zarraning harakati jadval bilan berilgan. Zarraning ko'chish tezligini toping.

t	0	Δ	2Δ
x	d	0	$-2d$

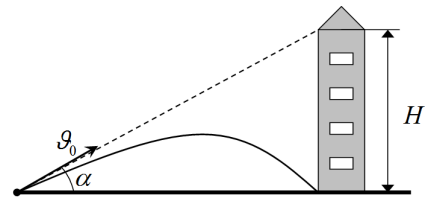
A) $-\frac{2d}{3\Delta}$. B) $\frac{d}{\Delta}$. C) $-\frac{3d}{2\Delta}$. D) $-\frac{2d}{\Delta}$.

58. Jism yerdan balandligi $H=40 \text{ m}$ bo'lgan minora tomiga qarata burchak ostida otilgan edi. Biroq u minora asosiga kelib tushdi. Jism qancha vaqt uchgan (s)? Havoning qarshilik kuchini hisobga olmang. $g=10 \text{ m/s}^2$.



A) 1. B) $2\sqrt{2}$. C) $\sqrt{2}$. D) 2.

59. Jism yerdan balandligi H bo'lgan minora tomiga qarata burchak ostida otilgan edi. Biroq u minora asosiga kelib tushdi. Jism 2 s vaqt uchgan bo'lsa, bino balandligi H ni toping (m). Havoning qarshilik kuchini hisobga olmang. $g=10 \text{ m/s}^2$.

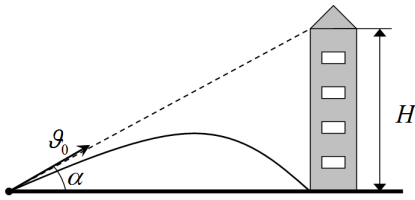


A) 18. B) 15. C) 10. D) 20.

60. Toshkent shahri 41° shimoliy kenglik va 69° sharqiy uzunlikda joylashgan. Yerning o'z o'qi atrofida aylanishidagi shaharning tezligi, shu shahardan 360 km/h tezlik bilan uchayotgan samolyotning yer sirtiga nisbatan tezligidan kattami yoki kichik? Ekvator uzunligi 40000 km , $T=24$ soat.

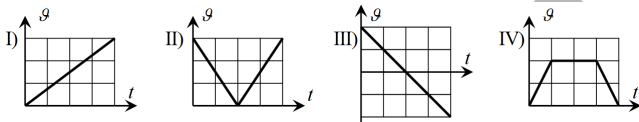
- A) kichik. B) katta. C) teng.
D) samolyot uchish yo'nalishiga bog'liq.

61. Jism yerdan balandligi 60 m bo'lgan minora tomiga qarata 60° burchak ostida otilgan edi. Biroq u minora asosiga kelib tushdi. Jism boshlang'ich tezligini toping (m/s). Havoning qarshilik kuchini hisobga olmang. $g=10 \text{ m/s}^2$.



- A) 18. B) 15. C) 10. D) 20.

62. Rasmda jism tezligining vaqtga bog'lanish grafiklari keltirilgan. Qaysi grafikda jism harakati oxirida boshlang'ich vaziyatga eng yaqin masofada bo'ladi?



- A) I. B) II. C) III. D) IV.

63. Zarraning harakati jadval ko'rinishida berilgan. Zarraning o'rtacha ko'chish tezligini toping (m/s).

t (s)	0,7	0,8	0,9
X (m)	1,6	1	-1

- A) -13. B) 13. C) 14. D) 15.

64. Oyda erkin tushayotgan jism 4 sekundda qanday masofani bosib o'tadi (m)? $g=1,6 \text{ N/m}$.

- A) 9. B) 10. C) 13. D) 12,8.