Matematika

11-sinf

1-BILET

1. Tenglamani yeching: $log_7(-4+x)=3$
2. Funksiyaning quyidagi oraliqdagi $-\frac{2\pi}{3} \le x \le 0$ eng katta qiymatini toping:

y=8cos x- $\frac{27}{\pi}$ x+8

3. Quyidagi integralning b ning qanday qiymatida 1 ga teng bo‘ladi ?

$\int_{-1}^{1}(4\,x+b)dx$

4. Aylanaga tashqi chizilgan teng yonli trapetsiyaning o‘rta chizig‘i 5 ga teng. Shu trapetsiyaning yon tomonini toping.
5. Hajmi 36 ga teng bo‘lgan muntazam to‘rtburchakli piramidaning asosidagi ikki yoqli burchagi 45^0. Piramida asosining tomonini toping.

2-BILET

1. Ifodaning qiymatini toping: $\frac{36\sin 42^\circ \cos 42^\circ}{\sin 84^\circ}$
2. Funksiyaning quyidagi oraliqdagi $-\frac{\pi}{4} \le x \le \frac{\pi}{4}$ eng katta qiymatini toping:

y=16 tgx- 16x+ 4 π+5

3. Quyidagi integralning qiymatini toping: $\int_0^1(2+3\,x)dx$
4. Doiraga ichki chizilgan to‘g‘ri to‘rtburchakning tomonlari 12 va 16 ga teng. Doiraning yuzini toping.
5. Muntazam to‘rtburchakli piramidaning balandligi 6 sm , apofemasi 6,5 sm. Piramida asosining perimetrini toping.

3-BILET

1. Ifodaning qiymatini toping: $11^7 \cdot 25^5 : 275^5$
2. Ushbu $f(x)=2x^2-1$ funksiya grafigiga abssissasi $x_0=0$ bo‘lgan nuqtada o‘tkazilgan urinma tenglamasini ko‘rsating.
3. Agar $f(x)=\frac{1}{2}$ tg2x bo‘lsa, $f'(\frac{\pi}{6})$ ni hisoblang.
4. Agar A(-3; y) va B(5;-4) nuqtalar orasidagi masofa 10 birlik bo‘lsa, y ni toping.
5. Asos aylanasining uzunligi $8\sqrt{\pi}$ ga, balandligi 9 sm ga teng bo‘lgan konusning hajmini toping.

4-BILET

1. a=$\sqrt{45 \cdot 10 \cdot 18}$ va b=$\sqrt[3]{16 \cdot 36 \cdot 81}$ sonlarining eng kichik umumiy karralisi va eng katta umumiy bo‘luvchisi ayirmasini toping.
2. y=6x+9 to‘g‘ri chiziq y=x^2+7 x-6 funksiya grafigining urinmasiga parallel. Urinish nuqtasining abssissasini toping.
3. Agar $f(x)$=x^3+x-$\sqrt{2}$ va $g(x)$=3x^2+x+$\sqrt{2}$ bo‘lsa , $f'(x) > g'(x)$ tengsizlikning eng kichik natural yechimini toping.
4. $|\vec{a}| = 4$, $|\vec{b}| = 3$ va ($\vec{a}$, $\vec{b}$)=60^0. ***k*** ning qanday qiymatida ($\vec{a}$ + ***k***$\vec{b}$) vector $\vec{a}$ vektorga perpendikulyar bo‘ladi ?
5. Ikki sfera yuzlarining nisbati 2 ga teng. Bu sferalar diametrlarining nisbatini toping.

5-BILET

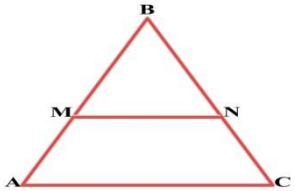
1. Agar $\sin x - \frac{1}{\sin x} = -3$ bo‘lsa , $\sin^2 x$+$\sin^{-2} x$ ning qiymati qanchaga teng bo‘ladi ?
2. Funksiyaning aniqlanish sohasini toping: y=$\sqrt{x^2 - 9} + \frac{2}{\sqrt{-x}}$
3. Moddiy nuqta $S(t)$=e^t+$\cos t$+5 t qonuniyat bo‘yicha harakatlanayapti. Shu nuqtaning t=0 dagi tezligini toping.
4. Teng yonli trapetiyaning yon tomoni 5 ga teng, diagonali esa o‘rta chizig‘ini 3 va 7 ga teng bo‘lgan kesmalarga ajratadi. Trapetsiyaning yuzini toping.
5. Uchburchakli to‘g‘ri prizmaning tomonlari 29 sm, 25 sm va 6 sm, yon qirrasi esa asosining katta balandligiga teng. Prizmaning hajmini toping.

6-BILET

1. Hisoblang: $\sqrt[3]{2001 \cdot 1997 - 1998 \cdot 2000 + 9}$;
2. Agar tg $(\frac{\pi}{2} - \alpha) = \frac{29}{11}$ bo‘lsa, tg α ni toping.
3. Agar $F'(x) = x - 4$ va $F(-2) = 0$ bo‘lsa, $F(x)$ funksiyani toping.
4. 3x+4y+7=0 va 3x+y-5=0 to‘g‘ri chiziqlarning kesishish nuqtasi koordinata boshidan qanday masofada joylashgan?
5. Tekislikka og‘ma va perpendikulyar tushirilgan. Og‘ma va tekislik orasidagi burchak $\arccos\frac{15}{17}$ ga, og‘maning tekislikdagi proyeksiyasi 30 ga teng. Perpendikulyarning uzunligini toping.

7-BILET

1. $(b-c)(b^2+bc+c^2)$ ifodaning $b=\sqrt[3]{5}$ va $c=\sqrt[3]{3}$ bo‘lgandagi qiymatini hisoblang.
2. Tengsizlikni yeching: $\arcsin(x^2-4)\leq\frac{\pi}{6}$;
3. Funksiya hosilalasini toping: $y=\frac{\arcsin x}{2x}$;
4. Rasmda $MN \parallel AC$, MBN uchburchakning perimetri 42 *sm*, ABC uchburchakning perimetri 84 *sm*. MBN uchburchakning yuzi $44sm^2$ bo‘lsa, ABC uchburchak yuzini (sm^2) toping.



5.Uzunligi 15 m bo‘lgan telefon simi yerdan balandligi 8 m bo‘lgan simyog‘ochdan uyga qarab 20 m balandlikka tortilgan. Sim osilib turmagan deb faraz qilib, simyog‘ochdan uygacha masofani toping.

8-BILET

1. $a=\log_{0,2}8$, $b=\log_4 2$, $c=\log_{0,9}0{,}6$, $d=\log_3 0{,}8$ va $e=\log_{0,9}2$ sonlardan qaysilari musbat?
2. Quyidagi $f(x)=\sqrt[3]{sin^2 5x}$, $f'(\frac{\pi}{10})$ ni hisoblang.
3. Tenglamani yeching: $\frac{(n+1)!}{(n-1)!}=30$
4. Parallelogrammning burchaklaridan biri 150^0 ga teng. Uning 6 ga teng bo‘lgan diagonali tomoniga perpendikulyar. Parallelogrammning perimetrini toping.
5. Muntazam to‘rtburchakli piramidaning balandligi 24 ga, asosining tomoni 14 ga teng. Uning apofemasini toping.

9-BILET

1. $4\sqrt{7\frac{1}{2}}-\frac{2\sqrt{10}}{2\sqrt{3}-\sqrt{10}}+8+3\sqrt{10}$ ni soddalashtiring.
2. Tengsizlikni yeching: $\frac{(n-1)!}{(n-3)!}<72, n\geq 3, n\in N$.
3. Absissasi $x_0=2\sqrt{3}$ nuqtada bo‘lgan nuqtadan $f(x)=\sqrt{3}lnx$ funksiyaga o‘tkazilgan urinma OY o‘qi bilan qanday burchak tashkil etadi?
4. Agar $\vec{a}(-4;2;2)$ va $\vec{b}(\sqrt{2};-\sqrt{2};0)$ vektorlar berilgan bo‘lsa, $2\vec{a}$ va $\frac{\vec{b}}{2}$ vektorlar orasidagi burchakni toping.
5. Muntazam to‘rtburchakli prizmaga silidr ichki chizilgan. Silindr hajmining prizma hajmiga nisbatini toping.

10-BILET

1. $f(x) = -x + \frac{x^2}{2}$ funksiyasining (6;2) nuqtadan o‘tuvchi boshlang‘ich funksiyasini toping.
2. $x^{\log_3 x^2 + \log_3^2 x - 10} = \frac{1}{x^2}$ tenglamani yeching.
3. $\bar{a} = 2\bar{\imath} + \bar{\jmath}$ va $\bar{b} = -2\bar{\jmath} + 2\bar{k}$ vektorlarda yasalgan parallelogrammning diagonallari orasidagi burchakni toping.
4. Aylananing AB vatari uning radiusiga teng. Katta AB yoyning ixtiyoriy nuqtasidan qaraganda AB vatar qanday burchak ostida ko‘rinadi?
5. Hajmi $8\sqrt{3}$ ga teng bo‘lgan muntazam tetraedrning balandligini toping.

11-BILET

1. $y = 6\ lg\frac{x}{3}$ funksiyaga teskari funksiyani aniqlang.
2. $|sinx + 1| > 1{,}5$ tengsizlik x ning $(0;\ \pi)$ oraliqqa tegishli qanday qiymatlarida o‘rinli bo‘ladi?
3. Agar $x - y = 5$ va $xy = 14$ bo‘lsa, $x^3y + xy^3$ ning qiymati qancha bo‘ladi?
4. ABC uchburchak α tekislikni B_1 va C_1 nuqtalarda kesib o‘tadi. Agar AB_1: BB_1=2:3, BC=15 sm, BC∥B_1C_1 bo‘lsa , B_1C_1 kesma uzunligini toping.
5. $\vec{m}(2;3;x)$ va $\vec{n}(-1;4;2)$ vektorlar perpendikular bo‘lsa, x ning qiymati qanchaga teng bo‘ladi?

12-BILET

1. Hisoblang: $\frac{202^2 - 54^2 + 256 \cdot 352}{4^4 \cdot 10^2}$
2. $\{a_n\}$-arifmetik progressiyada $a_2 - a_1 = 6$, bo‘lsa $a_8 - a_5$ ning qiymati nechaga teng bo‘ladi?
3. Agar $f(x) = x^5 + 5x^4 + 4x^3 + 3x^2 + 2x + 1$ bo‘lsa $f(0)$ va $f'(0)$ ni toping.
4. AB, AC, AD to‘g‘ri chiziqlar juft-jufti bilan o‘zaro perpendikulyar. Agar BD=9 sm, BC=16 sm, AD=5 sm bo‘lsa, CD kesma uzunligini toping.
5. Uchlari $A(2;3;1), B(3;2;1)$ va $C(3;4;1)$ nuqtalarda bo‘lgan teng yonli uchburchakning asosidagi burchagini toping.

13-BILET

1. $\log_5 tg36^0 + \log_5 tg54^0$ ni hisoblang.
2. Agar $2 < x \leq 5$ va $3 \leq y < 6$ bo‘lsa, $xy - x$ ning qiymatini qaysi oraliqqa tegishli bo‘ladi?
3. Tenglamani yeching: $y = \ln x - \frac{1}{2}x^2 + 1$, agar $y' = 0$ bo‘lsa.
4. $x^2 + y^2 - 5x - 6y + 4 = 0$ aylananing absissa o‘qidan ajratgan kesma uzunligini toping.
5. Diagonal kesimi kvadrat bo‘lgan silindr yon sirtining yuzi 64 π ga teng. Uning radiusini toping.

14-BILET

1. $y = -6x^2 + 7x - 2$ kvadrat funksiyaning nollari yig‘indisini toping.
2. $sin(\frac{1}{2}arccos\frac{1}{9})$ ni hisoblang.
3. Integralni hisoblang: $\int \frac{\sin^2 x}{1+cosx} dx$
4. Aylanaga yon tomoni 10ga, asosi $\frac{10\sqrt{11}}{3}$ ga teng bo‘lgan teng yonli uchburchak ichki chizilgan. Aylana radiusini toping.
5. ABCD A_1 B_1 C_1 D_1 kubning qirrasi 8 sm bo‘lsa, AB_1C uchburchak perimetri va DAC_1 uchburchak yuzini toping.

15-BILET

1. $\sqrt{a - 2a^{\frac{1}{2}}b^{\frac{1}{2}} + b} - \frac{a-b}{a^{\frac{1}{2}} - b^{\frac{1}{2}}}$ ni soddalashtiring. $(a > b)$
2. a ning qanday qiymatlarida $3x + 2y = 3$ va $3x - 2ay = 5$ to‘g‘ri chiziqlarning kesishish nuqtasi musbat ordinataha ega?
3. $\cos x \cos 2x = \cos 3x$ tenglama $[0; 2\pi]$ oraliqda nechta ildizga ega?
4. a ($-1 < a < \frac{1}{2}$) ning qanday qiymatlarida uzunliklari mos ravishda 1+a, 1-2a va 2 ga teng bo‘lgan kesmalardan uchburchak yasash mumkin?
5. $\bar{m}(-1; 5; 3)$ va $\bar{n}(2; -2; 4)$ vektorlarning skalyar ko‘paytmasini hisoblang.

16-BILET

1. $f(x) = -2x^2 + 18x + 12$ funksiyaning o‘sish oralig‘ini aniqlang.
2. Soddalashtiring: $(\sqrt{7} + \sqrt{2} - 1)(\sqrt{7} + 1 - \sqrt{2})$
3. Agar $f'(x) > 0$ bo‘lsa, $f(x) = 3x^2 - 4x$ tengsizlikni yeching.
4. M nuqta tomoni 60sm bo‘lgan muntazam ABC uchburchakning har bir uchdan 40 sm masofada joylashgan. ABC uchburchak tekisligidan M nuqtagacha bo‘lgan masofani toping.
5. Agar shar sektori asosi aylanasining radiusi 60 sm ga, sharning radiusi esa 75 sm ga teng bo‘lsa shar sektorining hajmini toping.

17-BILET

1. Tenglama ildizlarining ko‘paytmasini toping: $\sqrt{x^2 + 77} - 2\sqrt[4]{x^2 + 77} - 3 = 0$
2. $y = \frac{-3}{e^x}$ funksiyaning boshlang‘ich funksiyasini toping.
3. Tenglamani yeching: $\frac{(n+2)!}{n!} = 72, n \epsilon N.$
4. O‘tkir burchagi 60^0 ga teng bo‘lgan teng yonli trapetsiyaning asoslari 1:2 nisbatda. Trapetsiyaning perimetri 50 ga teng bo‘lsa, uning katta asosini toping.
5. Muntazam oltiburchakka tashqi chizilgan aylananing uzunligi 4π ga teng. Shu ko‘pburchakning yuzini toping.

18-BILET

1. x ning qanday qiymatlarida $|x^2-36|=36-x^2$ tengsizlik o‘rinli bo‘ladi?
2. $y=\frac{6x}{5x-3}$ funksiyaning grafigiga $x_0=1$ nuqtada o‘tkazilgan urinma va koordinata o‘qlari bilan chegaralangan yuzani toping.
3. Agar $tg\alpha=-\frac{1}{2}$ bo‘lsa, $\frac{2\cos^2\alpha-sin2\alpha}{2\sin^2\alpha-sin2\alpha}$ ni hisoblang.
4. Rombning diagonallari 32 va 4 sm ga teng bo‘lsa, uning katta burchagining kotangensini toping.
5. Muntazam piramidaning yon sirti to‘la sirtining 60% ini tashkil etadi. Piramidaning yon yoqlari va asos tekisligi orasidagi burchakni toping.

19-BILET

1. Tenglamaning ildizlari ko‘paytmasini toping: $x^2-3|x|-28=0.$
2. $F(x)=\frac{1}{2}x^2-\cos x+c$ funksiya $y=f(x)$ funksiyaning boshlang‘ich funksiyasi, $y=f(x)$ funksiyaning hosilasini toping.
3. $4cos5x=6+3\cos(\frac{\pi}{2}+5x)$ tenglama $[-\pi;2\pi]$ kesmada nechta ildizga ega?
4. Teng yonli trapetsiyaning asoslari 8 va 12 ga teng. Uning diagonallari o‘zaro perpendikulyar. Teng yonli trapetsiyaning yuzini toping.
5. Konusning yasovchisi $6\sqrt[3]{3}$ ga teng va u asos tekisligi bilan 30^0li burchak hosil qiladi. Konusning hajmini toping.

20-BILET

1. Ifodani qiymatini toping: $\frac{3^{-10}\cdot 7^{-5}\cdot(\frac{1}{9})^{-2}}{(\frac{1}{21})^8\cdot 49}$
2. $f(x)=x^3-27x$ funksiyani o‘sish va kamayish oralig‘ini toping.
3. $tg\frac{x}{2}=3$ ga teng bo‘lsa, $\sin x,\cos x,ctgx$ qiymatini toping.
4. Rombning tomoni 6 sm, yuzi 18 ga teng bo‘lsa , uning o‘tmas burchagini toping?
5. To‘rtburchakli muntazam prizmaning diagonali 3,5 sm ga teng, yon yog‘ining diagonali 2,5 sm ga teng. Prizmaning hajmini toping.

21-BILET

1. $8cos5^0cos10^0cos20^0cos40^0$ yig‘indi ko‘rinishida tasvirlang va hisoblang.
2. $y=4-2x$ va $y=4-x^2$ funksiya grafiklari bilan chegaralangan yuzani hisoblang.
3. Agar $\{a_n\}$ –arifmetk progressiyada $a_{10}=131,d=12$ bo‘lsa, a_1 ni toping.
4. To‘g‘ri burchakli uuchburchakning katetlaridan biri 12 sm, gipotenuzasi boshqa katetidan 6 sm katta. To‘g‘ri burchakli uuchburchakning yuzini toping.
5. To‘rtta nuqta berilgan. $A(0;1;-1),B(1;-1;2),C(3;1;0),D(2;-3;1).\overline{AB}$ va $\overline{CD}$ vektorlar orasidagi φ burchakning kosinusini toping.

22-BILET

1. Ifodaning qiymati ratsional son ekanligini isbot qiling: $\frac{9-4\sqrt{5}}{9+4\sqrt{5}}+\frac{9+4\sqrt{5}}{9-4\sqrt{5}}$
2. Sistemani yeching: $\begin{cases} sinxcosy = 0{,}25 \\ sinycosx = 0{,}75 \end{cases}$
3. Hisbolang: $f(x)=\frac{2x+1}{3x-5}, f'(2)=?$
4. Ikkita o‘xshash uchburchaklarning perimetrlari 18 va 36. Yuzalarining yig‘indisi 30 ga teng. Katta uchburchakning yuzini toping.
5. Silindr asosining radiusi 2 m, balandligi 3 m ga teng. O‘q kesimining diagonalini toping.

23-BILET

1. Kasrni qisqartiring: $\frac{3^{2n+1}-3^{2n-1}}{4*3^n}$
2. $\{b_n\}$ geometrik progressiyaning birinchi hadi b_1 va maxraj q ma’lum. Agar $b_1=\frac{243}{256}, q=\frac{2}{3}, n=8$ bo‘lsa b_n ni toping.
3. Funksiyaning [-4;1] oralig‘idagi eng katta va eng kichik qiymatini toping: $f(x)=x^4-8x^2+3$
4. Uchburchakning birinchi tomoni x ($x>5$) sm, ikkinchi tomoni undan 4 sm qisqa, uchinchi tomoni esa birinchisidan 4 sm uzun. Shu uchburchakning perimetrini toping.
5. To‘g‘ri burchakli parallelepiped o‘lchovlari 15 m, 50 m va 36 m. Unga tengdosh kubning qirrasini toping.

24-BILET

1. Kasrni qisqartiring: $\frac{25x^2-20xy}{16y^2-20xy}$
2. Tengsizlikni yeching: $\lg(5-2x)>1$
3. Integralni hisoblang: $\int_0^2(1+2x)^3dx$
4. Rombning tomoni 4 ga, o‘tmas burchagi 120^0 ga teng. Rombning yuzini toping.
5. Kesik konus asoslarining radiuslari 3 m va 6 m balandligi 4 m. Yasovchisini toping.

25-BILET

1. Ifodani soddalashtiring: $\frac{\frac{1}{3}\sqrt{39}-\frac{1}{2}\sqrt{26}}{\frac{1}{6}\sqrt{13}}+\sqrt{18}.$
2. Tenglamani yeching: $49^{x^2-3x}=(\frac{1}{7})^{3-x}$
3. $\int_0^{\pi} xsinxdx$ integralni hisoblang.
4. Teng yonli uchburchakning yon tomoni b ga, uchidagi burchagi 2α ga teng. Unga ichki chizilgan aylananing radiusini toping?
5. Kubning har bir qirrasi 2 sm orttirilsa, uning hajmi 98 m^3 ortadi. Kubning qirrasi qanchaga teng?

26- BILET

1. Funksiyani aniqlanish sohasini toping: $y = \sqrt{49 - x^2}$
2. Boshlang‘ich funksiyani toping, agar $f(x) = 3x^2 + 2x + 1, F(0) = 3.$
3. Tenglamani yeching: $\arccos(2x - 1) = \frac{\pi}{3}$
4. $x - 2y = 75$ to‘g‘ri chiziq $x^2 - y^2 = 169$ aylanani kesib o‘tmasligini isbotlang.
5. Ichki burchaklarini har biri 150^0 ga teng bo‘lgan muntazam ko‘pburchak nechta tomoni bor?

27-BILET

1. $731^3 - 611^3$ ifodani qiymatini 120 ga bo‘linishini isbot qiling.
2. Funksiya hosilasini toping: $y = tgx(2x - 4)$
3. $x^2 + y^2 + 4x - 6y - 3 = 0$ tenglama bilan berilgan aylana markazini toping.
4. AOB burchak 40^0, BOC burchak 80^0. Bu ikki burchak bissektrissalari orasidagi burchakni toping.
5. Tomoni 3,2 sm va qalinligi 0,7 sm bo‘lgan muntazam sakkizburchak shaklidagi yog‘och plitkaning massasi 17,3 gr. Yog‘ochning zichligini toping.

28-BILET

1. Tenglamani yeching: $\sqrt{\frac{1+x}{x}} + \frac{1}{x} = 5$
2. $S(t) = 2t^2 - 3t + 4$ qonuniyat bilan harakatlanayotgan moddiy nuqtaning t=2 dagi tezlik va tezlanishini hisoblang.
3. Quyidagi chiziqlar bilan chegaralangan figura yuzini toping.

$y = 2x^2, y = \frac{2}{x}, y = 0$ va $x=e$.

4. Bir-biridan 3,4 m uzoqlikda bo‘lgan vertikal ustunlarning yuqori uchlari to‘sin bilan tutashtirilgan. Ustunlarning balandliklari 5,8 m va 3,9 m bo‘lsa, to‘sin uzunligini toping.
5. α tekislik ABC uchburchakning AB va AC tomonlarini B_1 va C_1 nuqtalarda kesib o‘tadi. Agar $AB_1 : BB_1 = 3:1, B_1C_1 = 12sm, BC \parallel \alpha$ bo‘lsa, BC kesmaning uzunligini toping.

29-BILET

1. Quyidagi ifodaning eng kichik qiymatini toping: $\frac{2sin\alpha-1}{5-2sin\beta}+\frac{tg^2\gamma+ctg^2\gamma}{2}$
2. Ushbu $y=x^2+\ln(x-1)$ funksiyaning grafigiga $x_0=2$ nuqtada o‘tkazilgan urinmaning burchak koeffitsientini toping.
3. $f(x)=2cos\frac{x}{2}+3$ funksiyaning qiymatlar sohasini topimg.
4. Quyidagi $y=\frac{1}{3}x^2-\frac{1}{3}x-3$ (parabola) va $4x+3y+9=0$ (to‘gri chiziq) larning kesishgan nuqtalari orasidagi masofani toping.
5. Piramidaning barcha yon yoqlari muntazam uchburchaklardan iborat. Agar piramidaning to‘la sirti $81\sqrt{3}$ ga teng bo‘lsa, uning yon yoqlari markazlari orasidagi masofani toping.

30-BILET

1. Hisoblang: $A=5^B, B=2log_{25}8+log_{\frac{1}{5}}5$
2. Agar $f(x)=xln(x^2+2x-7)$ ga teng bo‘lsa, $f'(2)$ ni hisoblang.
3. $f(x)=\frac{1}{sin^6x+cos^6x}$ funksiyaning qiymatlar sohasini toping.
4. $2x-y=10$ va $3x+2y=1$ chiziqlarning kesishish nuqtasi markazi koordinata boshida bo‘lgan aylanada yotadi. Shu aylana radiusini toping.
5. To‘gri burchakli paralellelepipedning diagonali 13 sm, yon yoqlarining diagonallari $4\sqrt{10}$ va $3\sqrt{17}$ sm ga teng. To‘gri burchakli paralellelepipedning hajmini toping.