2019-yil

2018 - 2019 – O'QUV YILIDA O'RTA TA'LIM MAKTABLARINING

9-SINF O'QUVCHILARI UCHUN MATEMATIK FANIDAN MUSTAQIL SHUG'ULLANISH UCHUN

IMTIHON JAVOBLARI

MATEMATIKA

9- SINFLAR UCHUN IMTIHON JAVOBLARI

MATEMATIKA

1-bilet

1. Hisoblang:

(1,4-3,5:$1\frac{1}{4}$):1,4+3,4:$2\frac{1}{8}$ =1,4:1,4- $\frac{35}{10} * \frac{4}{5} * \frac{10}{14} + \frac{34}{10} * \frac{8}{17} = 1 - 2 + 1\frac{3}{5} = \frac{3}{5}$

2. a+10, a, P-?, S=1200

Yechish:

1). a*(a+10)=1200 A.S. a>0

$a^2 + 10a - 1200 = 0$

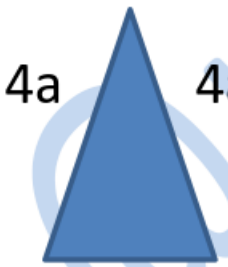
$\begin{cases} a_1 = -40 \\ a_2 = 30 \end{cases}$ ⬅ $\begin{cases} a_1 + a_2 = -10 \\ a_1 * a_2 = -1200 \end{cases}$

2). a=30 bo'lsa, P ni toppish kerak: P=2*(a+a+10)=2*(30+30+10)=2*70=140

3. $ctg^2a + sin^2a + ctg^2a * sin^2a = ctg^2a + sin^2a(1 + ctg^2a) = ctg^2a + sin^2a * \frac{1}{sin^2a} = ctg^2a + 1 = \frac{1}{sin^2a}$

4. Romb parallelogramning tomonlari teng bo'lgan xususiy xolidir. Rombning tomonlari teng va qarama-qarshi tomonlari parallel. Qarama-qarshi burchaklari esa o'zaro teng. Diagonallari bir vaqtning o'zida burchak bissektrissasi ham bo'ladi, hamda perpendikulyar kesishadi.

5.



P=55sm bo'lsa , tomonlarini topish kerak:

Yechish: 1) P=4a+4a+3a=11a=55

a= 55:11=5

2) 4a=4*5=20 4a=4*5=20 3a=3*5=15

2-Bilet

1. Hisoblang:

$\frac{0,5^2 - 0,5}{0,4^2 + 2*0,4*0,1 + 0,1^2} = \frac{0,5(0,5-1)}{0,5^2} = \frac{-0,5^2}{0,5^2} = 1.$

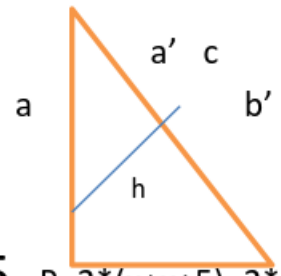
2. $\frac{1}{x} + \frac{1}{x+5} = \frac{1}{6}$ ➡ x=10, 2-brigada sarflaydigan vaqt: x+5=15.

3. tga-ctga= p bo'lsa, $tg^3a - ctg^3a = (tga - ctga)(tg^2a + tga * ctga + ctg^2a = p * ((tga - ctga)^2 + 3) = p * (p^2 + 3) = p^3 + 3p$

@uzmtihon

4. Bir burchagi to'g'ri qolgan ikki burchagi esa o'tkir bo'lgan uchburchak to'g'ri burchakli uchburchak deyiladi. Uning ikkita kichik tomonlari katetlar, qolgan tomoni esa gipotenuza deyiladi. Asosiy formulalari:

$h = \sqrt{a'b'}$; $c^2 = a^2 + b^2$: $a^2 = c * a'$; $b^2 = c * b'$; c=a'+b'



5. P=2*(x+x+5)=2*(2x+5)=4x+10=38

4x=28 x=7

3-Bilet

1. Soddalashtiring:

$(\sqrt{21} + \sqrt{14} - 2\sqrt{35}) * \frac{\sqrt{7}}{7} + \sqrt{20} = (\sqrt{3*7} + \sqrt{2*7} - 2\sqrt{5*7}) * \frac{1}{\sqrt{7}} + 2\sqrt{5} =$

$\sqrt{3} + \sqrt{2} - -2\sqrt{5} + 2\sqrt{5} = \sqrt{3} + \sqrt{2}$

2. $v_1 = 60{,}5 \ va \ v_2 = 0{,}8v_1 = 48{,}4$

t=$\frac{96{,}8}{60{,}5} = 1{,}6$

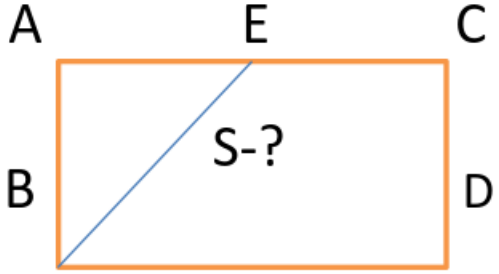
$s_{um} = t * (v_1 + v_2) = 1{,}6 * (60{,}5 + 48{,}4) = 1{,}6 * 108{,}9 = 174{,}24.$

3. $\frac{tg(\frac{s}{2} - D)}{\cos(2s - D)} * \frac{\sin(\frac{3s}{2} - D)}{tg(\frac{3s}{2} - D)} = \frac{ctgD}{cosD} * \frac{-cosD}{ctgD} = -1$

4. Kosinuslar teoremasi : $a^2 = b^2 + c^2 - 2 * b * c * cosa$



5.



Yechish:

AE=AB=4,5sm ; EC=5,5sm

S=AB*(AE+EC)=4,5*(4,5+5,5)=

4,5*10=45sm^2

@uzimtihon

4-Bilet

1. $-6m^2-12mn-6n^2=-6(m+n)^2$ $ifodani$ $n=198, m=-200$ $bo'lsa,$ $hisoblang.$

$-6*(-200+198)^2=-6*4=-24$

2. $\frac{18}{x}=\frac{12}{x+2}$

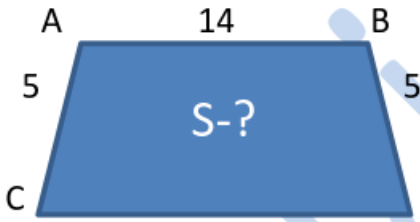
3. Hisoblang.

$\sin\frac{\pi}{8}\cos^3\frac{\pi}{8}-\cos\frac{\pi}{8}\sin^3\frac{\pi}{8}=\sin\frac{\pi}{8}\cos\frac{\pi}{8}\left(\cos^2\frac{\pi}{8}-\sin^2\frac{\pi}{8}\right)=\frac{\sin\frac{\pi}{8}\cos\frac{\pi}{4}}{2}=\frac{\sin\frac{\pi}{2}}{4}=\frac{1}{4}$

4. Uchburchakka ichki chizilgan aylanaga uchburchakning tomonlari urinma bo'ladi. Aylana radiuslari mos tomonlarga perpendikulyar bo'ladi. Ichki chizilgan aylana markazi uchburchak burchaklarining bissektrissalari kesishish nuqtalarida joylashadi. Radiusni toppish formulasi :

R=$\frac{S}{p}$; bu yerda ,,S" uchburchak yuzi, ,,p" esa yarim perimeteri.

5.



AK=BL=H; CK=LD=$\frac{20-14}{2}=3$

Yechish;

1) H=$\sqrt{5^2-3^2}=\sqrt{16}=4$

S=$\frac{a+b}{2}*h=\frac{14+20}{2}*4=17*4=68sm^2.$

5-Bilet

1. Hisoblang: $\sqrt{\frac{82^3-18^3}{64}+82*18}=\sqrt{\frac{(82-18)(82^2+82*18+18^2)}{64}+82*18}=$

$\sqrt{(82+18)^2}=100.$

2. $x^2-6x+8=4-x$

$x^2-5x+4=0$

$\begin{cases} x_1+x_2=5 \\ x_1*x_2=4 \end{cases} \Rightarrow \begin{cases} x_1=4 \\ x_2=1 \end{cases}$ J: Kesishadi

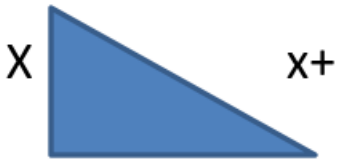
3. $\frac{2sinx-cosx}{2cosx+sinx}=3$ ifodaning sur'at va mxrajini cosx ga bo'lamiz.

$\frac{2tgx-1}{2+tgx}=3 \Rightarrow$ 2tgx-1=6+3tgx $\Rightarrow$ tgx=-7

@Uzimtihon

4. Doira deb bir nuqtadan malum masofagacha bo'lgan nuqtalar jamlanmasiga aytiladi. Doira yuzi formulasi: S=πr^2 .

5.



Yechish:

2x=x+15 ➔ x=15

C=x+15=30

6-Bilet

1. $\frac{9-4\sqrt{5}}{9+4\sqrt{5}}+\frac{9+4\sqrt{5}}{9-4\sqrt{5}}=\frac{81-72\sqrt{5}+80+81+72\sqrt{5}+80}{81-80}$=322

2. $y=-x^2-4x+12$ $funksiya\ grafigi\ x=-1\ gacha\ o'sadi, x=-1\ dan\ keyin\ kamayadi.$

3. $\frac{sin3a}{sina}-\frac{cos3a}{cosa}=2$ ➔ $sin3a*cosa-cos3a*sina=2sina*cosa$ ➔ $\sin(3a-a)=sin2a$ ▲

4. Burchaklari , mos tomonlari nisbatlari teng bo'lgan uchburchaklar o'xshash uchburchaklar deyiladi. O'xshashlik koeffitsiyenti ,,k" kabi belgilanadi.

K=$\frac{a_1}{a_2}$; $k^2=\frac{s_1}{s_2}$

5. S=a*$h_a=b*h_b=36$ $va\ h_a=4,\ h_b=6$ ➔ a=9, b=6 ➔ P=2*(a+b)=2*(6+9)=2*15=30

7-Bilet

1. $2^8+2^6+2^5+3*2^4=2^4(16+4+2+3)=16*25$

2. $|6-3x|<18$

1) 6-3x-18<0 → x>-4 2) 6-3x+18>0 →x<8 ➔ x∈ $(-4;8)$

3. $cosa=-\frac{12}{13}, \pi<a<\frac{3\pi}{2}$ $bo'lsa\ sina=-\frac{5}{13}\ bo'ladi,$

$tga=\frac{sina}{cosa}=\frac{\frac{5}{13}}{\frac{12}{13}}=\frac{5}{12}$ $bo'ladi.$

4. Pifagor formulasi : $c^2=a^2+b^2$

Isboti : kosinuslar teoremasi : $c^2=a^2+b^2-2*a*b*cosj$

Cos90° $=0\ bo'lishidan\ pifagor\ teoremasi\ kelib\ chiqadi.$

5. $a(-1;0);\ b(0;1)$ $c=-4a+3b=7$

@uzimtihon

8-Bilet

1. $soddalashtiring:\ 2\sqrt{3}-5-\frac{11}{\sqrt{12}-1}=2\sqrt{3}-5-2\sqrt{3}-1=-6$

2. -4≤ $5-3x<1$

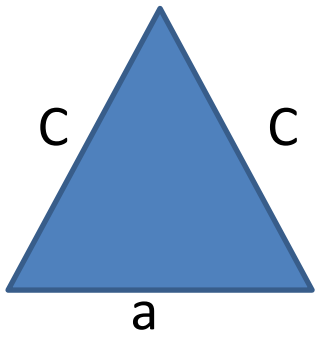
1.3x≤9 → x≤ 3 2. $3x>4$ → x>$1\frac{1}{3}$

2+3=5

3. $\frac{1-cos2a+sin2a}{1+cos2a+sin2a}=\frac{1-cos^2a+sin^2a+sin2a}{1+cos^2a-sin^2a+sin2a}=\frac{2sin^2a+sin2a}{2cos^2a+sin2a}=\frac{2sina(sina+cosa)}{2cosa(sina+cosa)}=tga$

4. $Trapetsiyaning\ yuzi\ formulasi:\ S=\frac{(a+b)*h}{2}$

5. h=8, a=12, R-?



$c=\sqrt{8^2+6^2}=\sqrt{100}=10$

$R=\frac{c}{2sina}=\frac{10}{2*\frac{4}{5}}=\frac{25}{4}=6{,}25.$

9-Bilet

1. $\left(\frac{1}{7}\right)^0+6*2^{-3}+2\left(\frac{2}{5}\right)^{-2}=1+\frac{3}{4}+\frac{25}{4}=8$

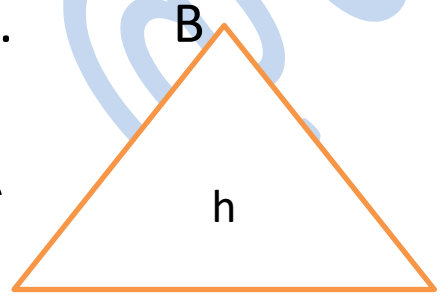
2. $y=3+4x-x^2$ $parabola\ pastga\ qaragan$ $x_0=-\frac{b}{2a}=2$

$y_0=3+8-4=7$ $y\le 7$

3. B BD=20, AB=25, BC=52, AD=63

$cosj=\frac{52*52+25*25-63*63}{2*25*52}\approx 0{,}25$

A C



4. $Parallelogramning\ qarama-qarshi\ tomonlari\ teng\ va\ paralleldir.$

Diogonallari kesishish nuqtasida teng ikkiga bo'linadi.

5. $a=13\quad b=14\quad c=15\quad r-?$

R=$\frac{S}{p}$; $s=\sqrt{p(p-a)(p-b)(p-c)}=\sqrt{21*8*7*6}=84$

R=$\frac{s}{p}=\frac{84}{21}=4\ sm$

@uzmtimon

10-Bilet

1. $soddalashtiring$: $\left(x-\frac{1+x^2}{x-1}\right):\frac{x^2+2x+1}{x-1}=-\frac{x+1}{x-1}*\frac{x-1}{(x+1)^2}=-\frac{1}{x+1}$

2. $x-1<-\frac{3}{x}$ ➔ $x+\frac{3}{x}-1<0$ ➔ $\frac{x^2-x+3}{x}<0$ ➔ x<0

Max(x) =-1

3. $0\le a\le 90°$ $cosa=1+a$ $a\in[-1;0]$ $sina-?$

$sina=\sqrt{1-(1+a)^2}=\sqrt{1-1-2a-a^2}=\sqrt{-a(2+a)}$

4. $Uchburchakning\ o'rtachig'i\ asosining\ yarmiga\ teng\ va\ parallel$ bo'ladi.

5. B C BC=10 AD=16

A D

H=$\frac{AD-BC}{2}=\frac{16-10}{2}=3$

S=$\frac{(a+b)*h}{2}=\frac{(10+16)*3}{2}=39.$

11-Bilet

1.soddalashtiring: $(\frac{2}{x^2-4}+\frac{1}{x(2-x)}):\frac{1}{(a+b)^2}=\frac{2x+x+2}{x(x-2)(x+2)}*(x+2)^2=\frac{(3x+2)(x+2)}{x(x-2)}$

2. $|x^2-5x|=6$

1) $x^2-5x-6=0$ ➔ $x_1=6$ $x_2=-1$

2) $x^2-5x+6=0$ ➔ $x_1=2$ $x_2=3$ ▲

3. $tga=-2{,}4\ \ bo'lsa\ \ sin2a-?$

Uchburchakda tomonlari 24;10;26 bo'ladi.

Bunda sina=$\frac{12}{13}$ $cosa=\frac{5}{13}$

Bundan sin2a= 2*sina*cosa=-$\frac{120}{169}$

26

10

4. $To'g'ri\ to'rtburchakdeb\ qarama-qarshi\ tomonlari\ teng\ va\ parallel,$ $yonma-yon\ tomonlari\ perpendikular\ bo'lgan\ to'rtburchakka\ aytiladi.$ $Uning\ diogonallari\ o'zaroteng\ va\ kesishish\ nuqtasida\ teng\ ikkiga\ bo'linadi.$

5. a=7 b=8 c=10 bo'lsa, cosj-?

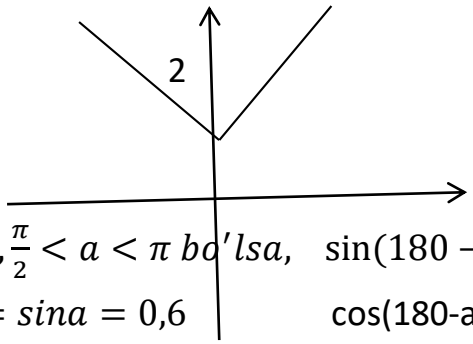
Cosj=$\frac{49+64-100}{2*7*8}=\frac{13}{112}$

@uzimthon

12-Bilet

1. soddalashtiring: $\frac{\sqrt{x}}{\sqrt{x}-5}-\frac{5}{\sqrt{x}+5}+\frac{x}{25-x}=\frac{x+5\sqrt{x}-5\sqrt{x}+25-x}{x-25}=\frac{25}{x-25}$

2. y=|$x+2$|



3. $sina=0{,}6\,,\frac{\pi}{2}<a<\pi\ bo'lsa,$ $\sin(180-a)$ va cos(180-a) -?

$\sin(180-a)=sina=0{,}6$ cos(180-a)=-cosa=-(-0,8)=0,8

4. $Tomonlarini\ davom\ ettirganda, kesishmaydigan\ va\ ko'pburchakni\ kesmaydigan\ shaklga\ qavariq\ ko'pburchak\ \ deyiladi.$

5. $a°=120°\quad r=a=10sm$ → h=5 asos=$10\sqrt{3}$ →

S=$\frac{h*asos}{2}=25\sqrt{3}$

13-Bilet

1. Hisoblang: $\frac{81^{0,4}*3^{0,5}}{9^{0,3}*27^{1/6}}=\frac{3^{2,1}}{3^{2,1}}$=1

2. $a_2+a_6=2a_1+6d=44$ $a_5-a_1=4d=20$ → d=5

$2a_1=14$ $a_1=7$ → $a_{100}=a_1+99d=502$

3. $tg\left(\frac{\pi}{4}+a\right)=3$ $tga-?$

$\frac{tg\frac{\pi}{4}+tga}{1-tg\frac{\pi}{4}*tga}=\frac{1+tga}{1-tga}=3$ $1+tga$=3-3tg$a$ $4tga=2$ $tga=\frac{1}{2}$

4. $Trapetsiyaning\ o'rtachizig'i\ asoslariga\ parallel\ va\ yig'indisi\ yarmiga\ teng.$

5. $c=15\quad a=12\quad b=9$ → AK=6; BK=9

14=Bilet

1. $soddalashtiring$: $\frac{a^3*b-ab^3}{a^2+ab-3a-3b}=\frac{ab(a^2-b^2)}{(a+b)(a-3)}=\frac{ab(a-b)}{a-3}$

2. $q=2\quad s_4=5=b_1{}^4*q^6=b_1{}^4*16$ $b_2=\frac{8}{\sqrt{5}}$

4. Uchburchakka tashqi chizilgan aylana radiusi : R=$\frac{abc}{4S}$

5. $a(2;-5)\quad b(-10;y)\quad a\ va\ b\ perpendikular$

$x_1*y_1+x_2*y_2=2*(-10)+(-5)*y=0$ $y=4$

15-Bilet

@uzimtihon

1. 3b32566 :9 b=2

2. $a_4 + a_{11} = a_1 + 13d = 0{,}2 \rightarrow a_1 = -7{,}6$

$a_9 - a_5 = 4d = 2{,}4 \quad d = 0{,}6$

3. sin(a+b)=sin(180-j)=sinj

4. urinma aylana bilan o'zaro 1 ta umumiy nuqtaga , kesuvchi esa 2 ta nuqtaga ega bo'ladi.

5. 2x+3x+4x=54 → 9x=54 → x=6 2x=12 3x=18 4x=24

16-Bilet

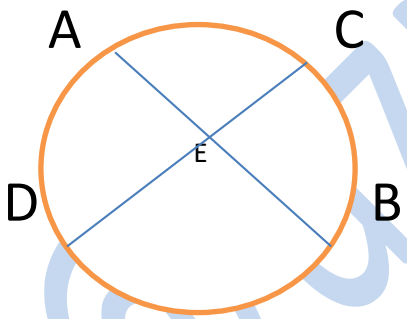
1. $9n^2 - (3n-2)^2 = 9n^2 - 9n^2 + 12n - 4 = 4(3n-1)$

2. $b_3 = 12 \quad b_5 = 48$ → q=∓2 → $b_1 = 3$ → S=$\frac{3*(64-1)}{2-1} = 189$

3. $\frac{sin^2a+sina*cosa}{cos^2a+sina*cosa} = \frac{\sin a(sina+cosa)}{cosa(sina+cosa)} = tga \qquad ctga = 3 \rightarrow tga = \frac{1}{3}$

4. *Uchburchaklar o'xshashligining 2 – alomati BTB alomati bo'lib, bir uchbur –*

Chakning tomoniga ikkinchi uchburchakning tomonlariga nisbati teng bo'lsa bu uchburchak-Lar o'xshash deyiladi.

5. 

Yechish:

AE=3 BE=36 CE:DE=3:4

3x*4x=12$x^2 = 108 \qquad x = 3$ →CE=9 DE=12

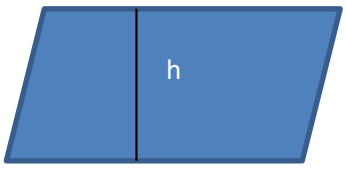
17-Bilet

1. $x + 16 = 70 - 0{,}8x$ → 1,8x=54 → x=30

2. $\frac{b_3}{b_2} = q = -\frac{1}{3} \qquad S = \frac{b_1}{1-q} = \frac{12}{1+\frac{1}{3}} = 9$

3. *Ifodani soddalashtiring* : $\frac{\cos 18° \cos 28° + \cos 108° \sin 208°}{sin34° \sin 146° + \sin 236° \sin 304°} = \frac{\cos(18°-28°)}{\sin(34°+56°)} = cos(-10)$

4. *Parallelogram yuzini topish formulasi*: $S = ah$

a 

5. $5 * 5 = (2+r)^2 + (3+r)^2 = 2r^2 + 10r + 13 = 25$

@azimtinon

$2r^2 + 10r - 12 = 0$ r=1

$a = r + 2 = 3$ $b = r + 3 = 5$

18-Bilet

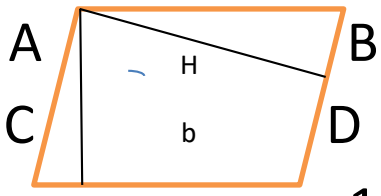
1. $jami - 25ta$ $qizlar - 15ta$ → $25*\frac{x}{100} = 15\ ta$ $x = 60\%$

2. $a_3 + a_5 = 2a_1 + 6d = 12$ $S_7 = \frac{2a_1+6d}{2} * 7 = 6 * 7 = 42$

3. $\sin(a + b) - 2 * sinb * cosa = sina * cosb - sinb * cosa = \sin(a - b) =$

$= \sin(46° - 16°) = sin30° = \frac{1}{2}$

4. *Uchburchaklar o'xshashligining BTB alomati bu, ikkita burchaklar o'zaroteng va ular orsidagi tomonlar nisbatiga aytiladi.*

5. 

$a = 25°$ → <CDB=155° → <DBA=25°

19-Bilet

1. $\frac{a+5,4-2,2}{3} = 1,2$ → a+3,2=3,6 → a=0,4

2. $x * (x + 8) = 273$ → $x^2 + 8x - 273 = 0$ → $x_1 = 13$ $x_2 = -21$ → x=13

X+8=21 [A.S. X>0]

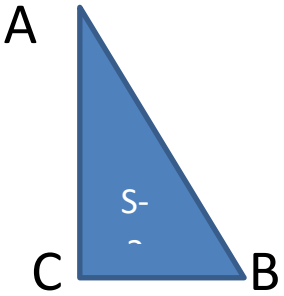
3 $\frac{\pi}{2} < a < \pi$ $\frac{sina*cos^2a}{tg^5a} = A$

$sina > 0$ $cos^2a > 0$ $tg^5a < 0$ → A<0

4. *son qiymati va yo'nalishi bilan aniqlanadigan (tasvirlanadigan)kattaliklar vekto kattaliklar yoki vektorlar deb ataladi.* Skalyar ko'paytma;
A$(x_1; y_1)$ *va* $b(x_2; y_2)$ *uchun* $x_1 * y_1 + x_2 * y_2$ *bo'ladi.*

5. $< A = 60°$; $< B = 30°$; $< C = 90°$; $AC + AB = 42$; $AB = 2AC$ → AC=14 AB=28 →

BC=AC*$\sqrt{3} = 14\sqrt{3}$ $S = \frac{BC*AC}{2} = \frac{14\sqrt{3}*14}{2} = 98\sqrt{3}$



@uzimtihon

20-Bilet

1. $459 = x + 2x + 6x = 9x$ → x=51 2x=102 6x=306 → 6x-x=5x=255

2. $\left(18\frac{1}{3} + x\right) : 3\frac{1}{7} = 7$ → $18\frac{1}{3} + x = 22$ → x= $3\frac{2}{3}$

3. $2cosx = \sqrt{3}$ → $cosx = \frac{\sqrt{3}}{2}$ → x∈ $\frac{\pi}{2} + 2\pi k$

4. $Uchburchak\ yuzini\ topish\ formulasi: S = \frac{ah}{2}$. $S = \frac{absinj}{2}$

5. <D=45° $YON\ TOMONI = 3\sqrt{2};$ → a=2b=6 h=3 → S=$\frac{(3+6)*3}{2} = 13{,}5$

21-Bilet

1. A*$\frac{125}{100} * \frac{90}{100} = A * \frac{11250}{10000}$ $J = 12{,}5\%$

2. $\frac{2x-3}{6} + x = \frac{2x-1}{3} - \frac{4-x}{2}$ → 2x-3+6x=4x-2-12+3x → x=-11

3. $\frac{\cos(a-b)-cosa*cosb}{\cos(a+b)+sina*sinb} = \frac{sina*sinb}{cosa*cosb} = tga * tgb$

4. *Aylanaga ichki chizilgan burchak deb, burchakning boshi aylana yoyi ham ichki sohasi ham aylana ichida joylashuviga aytiladi. uning gradus o'lchovi tortib tur – yoy yarmiga teng bo'ladi.*

5. $a = 6\ \ b = 3\ \ < j = 60°$ h_c =? S=$\frac{a*b*sinj}{2} = \frac{6*3*\frac{\sqrt{3}}{2}}{2} = 4{,}5\sqrt{3}$

Cosinuslar teoremasidan c=$3\sqrt{3}$ → $h_c = \frac{2S}{c} = \frac{9\sqrt{3}}{3\sqrt{3}} = 3$

22-Bilet

1. S=120 $v_1 = 50$ $v_2 = 0{,}6v_1 = 30$ $t-?$

T=S/$(v_1 + v_2) = \frac{120}{80} = 1{,}5$

2. $y = x^2 + px + q$ $A(2;-5)$ va $B(-1;16)$

$$\begin{cases} 4 + 4p + q = -5 \\ 1 - p + q = 16 \end{cases}$$ → p=-8 q=7

3. .$\frac{tg\frac{9\pi}{16} - tg\frac{5\pi}{16}}{1 + tg\frac{9\pi}{16} * tg\frac{5\pi}{16}}$ =tg($\frac{9\pi}{16} - \frac{5\pi}{16}$) $= tg45° = \frac{1}{\sqrt{2}}$

4. *To'g'riburchakli uchburchaklar o'xshashligi deb ularning katetlari va gepotenuzasi – ning nisbatlari mos ravishda teng bo'lishiga aytiladi.*

5. <A=120° $< B = 60°$ $2x + 3x = \frac{60}{2} = 30$ → 2x=12 3x=18

$d_1 = \sqrt{144 + 324 - 2 * 12 * 18 * \frac{1}{2}} = \sqrt{252} = 6\sqrt{7}$

@uzimtihon

23-Bilet

1. a+a+2+a+4=81 → 3a=75 → a=25 25;27;29

2. $a+b+c=0$ $bo'lsa$ $ax^2+bx+c=0$ → x=1

3. $\frac{2sin\frac{\pi}{12}cos\frac{\pi}{12}}{cos^2\frac{\pi}{8}-sin^2\frac{\pi}{8}} = \frac{sin30°}{cos45°} = \frac{\frac{1}{2}}{\frac{\sqrt{2}}{2}} = \sqrt{2}$

4. $Qavariq\ ko'pburchakning\ ichki\ burchaklari\ yig'indisi:\ 180*(n-2)$

$Tashqi\ burchaklari\ yig'indisiesa\ har\ doim\ 360°\ ga\ teng.$

5. $a(4;4\sqrt{3})$ $b(8\sqrt{3};8)$

$cosa = \frac{4*8*\sqrt{3}+4*\sqrt{3}*8}{\sqrt{16+48}*\sqrt{192+64}} = \frac{64\sqrt{3}}{128\sqrt{3}} = \frac{1}{2}$ ➔ a=60°

24-Bilet

1. $a-1;a;a+1;a+2$ $berilgan$ 2*(a+2+a-1)-(a+1-a)=45 → 4a=44 → a=11

2. $x^2-9x-7=0$ $x_1^2+x_1^2=(x_1+x_2)^2-2x_1x_2=81—7=88$

3. $\cos\frac{a}{2}+\sin\frac{a}{2}=\frac{1}{2}$ $cos^2\frac{a}{2}+sina+sin^2\frac{a}{2}=sina+1=\frac{1}{2}$ $sina=-\frac{1}{2}$

4. $Aylana\ deb,bir\ nuqtadan\ teng\ masofada\ joylashgan\ nuqtalar\ jamlanmasiga\ aytiladi.$

5. $S=6*\frac{4}{2}=12$ $yon\ tomon=5$ $R=\frac{a*b*c}{4S}=\frac{5*5*6}{4*12}=\frac{25}{8}=3{,}125$

25-Bilet

1. $\frac{x-3y}{y}=12$ $x=15y\ bo'lsa,\ \frac{2x+y}{y}=\frac{2*15y+y}{y}=31$

2. $\sqrt{8-7x}=x$ → $x^2+7x-8=0$ → x=1

3. $cosa=cos^2\frac{a}{2}-sin^2\frac{a}{2}=1-sin^2\frac{a}{2}-sin^2\frac{a}{2}=1-2sin^2\frac{a}{2}$

4. $Vektorlar\ orasidagi\ burchakning\ kosinusini\ topish\ formulasi:$

$cosa=\frac{x_1*y_1+x_2*y_2}{\sqrt{x_1{}^2+y_1^2}*\sqrt{x_1^2+y_1^2}}$

5. $2a+2b=90°$ ➔ a+b=45° ➔ <X=145° bo'ladi.

26-Bilet

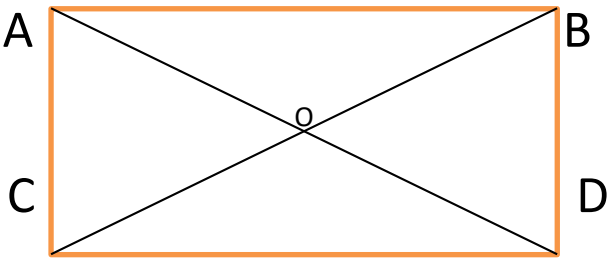
1. $\sqrt{\frac{0{,}49*a^4*b^6*c^8}{400d^{10}*c^{16}}}=\frac{0{,}7a^2*b^3*c^4}{20*d^5*c^8}$

2. $\frac{x^2-2x}{x-1}-\frac{2x-1}{1-x}=3$ → $x^2-2x+2x-1=3x-3$ → $x^2-3x+2=0$ → x=2

3. $\cos(180-a)=-cosa=0{,}6$

@uzimtihon

4. *Parallel to'g'ri chiziqlar deb o'zarokesishmaydigan to'g'ri chiziqlarga aytiladi. agar ularni uchinchi to'g'ri chiziq bilan kessak, ichki almashinuvchi va mos burchaklar teng, ichki bir tomonli burchaklar yig'indisi esa* $180°$ *ga teng bo'ladi.*

5. 

$s=12\sqrt{3}$ $< DAC = 60°$

<ACD=30° → DC=AC$\sqrt{3}$ → AC=2$\sqrt{3}$ $DC = 6$

27-Bilet

1. *soddalashtiring:* $\frac{x^2-100}{x^2-7x-30} = \frac{(x-10)(x+10)}{(x-10)(x+3)} = \frac{x+10}{x+3}$

2. $6{,}9 : 4{,}6 = (2x+5) : 5{,}4 = 3:2$ → 2x+5=3,1 → x=1,55

3. $tga * tg(90° - a) = tga * ctga = 1$

4. *Qavariq ko'pburchakning yuzini diogonallar yordamida topish formulasi:*

$S = \frac{d_1 d_2 * sina}{2}$

5. $P = x + 2x + 2x = 5x$ $P - 2x = 12 = 3x$ → x=4 P=5x=20.

28-Bilet

1. $\frac{x}{x+4} - \frac{x+2}{x+25} = \frac{1}{4}$ → $\frac{x^2+25x-x^2-6x-8}{(x+4)(x+25)} = \frac{1}{4}$ → $x^2 - 47x + 132 = 0$ → $x_1 = 44$ $x_2 = 3$

$x = 44$ bo'lsa kasr qisqaruvchi bo'libqolgani uchun $x = 3$ degan javob olinadi.

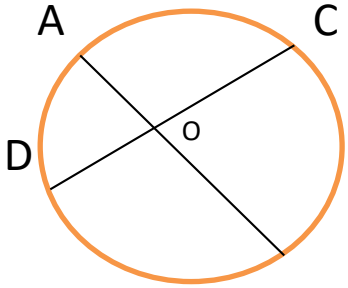
2. $3x^2 - mx - 6 = 0$ *tenglamada* $x_1 = -2$

$$\begin{cases} x_1 + x_2 = \frac{m}{3} \\ x_1 * x_2 = -\frac{6}{3} \end{cases} \rightarrow x_2 = 1 \rightarrow m=3*(-2+1)=-3$$

3. $\sin(a-b) + \sin\left(\frac{\pi}{2} - a\right) sinb = sina * cosb - sinb * cosa + cosb * sina =$

$= sina * cosb$

4. *Vatar deb, aylananing ixtiyoriy ikkita nuqtasini birlashtiruvchi kesmaga ay – tiladi. Markazdan o'tuvchivatar diametrdir. Kesishuvchi vatarlar uchun formula:*

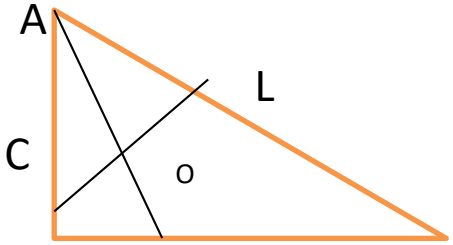


AO*OB=DO*OC

@uzimtihon

B

5. A



B

$Yechish$:

$CL\ va\ \ AK - bissektrisalar\ \ < CAK =< KAB = a$

$< ACL = 45°\ \ < AOC = 105°$ → <CAK=a=30°

<A=2a=60° $< B = 30°$

29-BIlet

1. $b^2 + ab - 2a^2 - b + a = b^2 - 2ab + a^2 - 3ab - 3a^2 - b + a = (b-a)^2 + 3a(b-a) - (b-a) = (b-a)(b+2a-1)$

2. $\frac{3}{2} - \left(\frac{x}{4} + \frac{1-2x}{6}\right) = 2$ → $\frac{3x+2-4x}{12} = -\frac{1}{2}$ → -12=4-2x → x=8

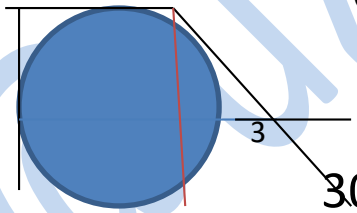
3. sinα=-0,75 $\pi < a < \frac{(3\pi)}{2}$ $\sin\beta = 0{,}8;\ 0 < \beta < \frac{\pi}{2}$

Sin(a-b)=$sina * cosb - sinb * cosa = (-0{,}75) * 0.6 - 0{,}8 * \frac{\sqrt{7}}{4} = 0{,}45 -$ $0{,}2*\frac{\sqrt{7}}{4}$

4. $Uchburchaklar\ tengligining\ TTT\ alomati\ ,bir\ uchburchak\ tomonlarining\ ikkin -$ Chi uchburchak tomonlariga nisbati mos ravishda teng bo'lsa, bunday uchburchaklar o'xshash uchburchaklar deyiladi.

5. $Kichik\ yon\ tomoni = x\ \ katta\ yon\ tomoni = y\ \ \ katta\ asos = 6\ \ kichigi = 3$

$(9-y)^2 + 9 = y^2$ → y=5



30-Bilet

1. $a^2 + 4ab + 5b^2 + 2b + 1 = a^2 + 4ab + 4b^2 + b^2 + 2b + 1 = (a+2b)^2 + (b+1)^2$

2. $3 \cdot (x-2) + x = -(-4x+16) + 10.$ → $x \epsilon R$

3. $a - b = \frac{\pi}{2}\ \ \frac{sina-sinb}{cosa+cosb} - ?\ \ \ \ aytaylik. a = 180°\ \ b = 90°\ \ \ \ unday\ bo'lsa,$ $\frac{sina-sinb}{cosa+cosb} = \frac{0-1}{-1+0} = 1$

4. $\frac{a}{sina} = \frac{b}{sinb} = \frac{c}{sinj} = 2R$

5. $d_1 = 6\ \ \ S = 24$ → $d_2 = 8\ \ \ \ P = 4a\ \ a = \sqrt{3^2 + 4^2} = 5\ \ P = 4a = 20$

31-Bilet

@uzimtihon

1. $\sqrt[3]{2001 * 1997 - 1998 * 2000 + 9}$ $a = 1998$ ➔

$\sqrt[3]{(a+3)(a-1) - a*(a+2) + 9} = \sqrt[3]{6}$

2. $\frac{x^3+8}{x+2} = 2x + 6$ → $x^2 + 2x + 4 = 2x + 6$ → x=$\sqrt{2}$

3. $a_3 + a_9 = 2a_1 + 10d = 8$ $S_{11} = \frac{a_1+a_{11}}{2} * 11 = \frac{8}{2} * 11 = 44$

4. *O'tkirburchak sinusi, kosinusi, tangensi, kotangensi ta'riflariquyidagicha*

1. *sinusi – qarshisidagi katetning gipotenuzaga nisbati*
2. *kosinusi – yopishgan katetning gipotenuzaga nisbati*
3. *tangensi – sinusning kosinusga nisbati*
4. *kotangensi – kosinusning sinusga nisbati*

5. $x + 3x = 20 * 2 = 40$ → x=10 3x=30

32-Bilet

1. *Hisoblang*: $\left(\frac{2-b}{b-1} + \frac{2*(a-1)}{a-2}\right) : \left(\frac{b*(a-1)}{a-2} + \frac{a*(2-b)}{a-2}\right)$ ➔ $\frac{(ab-2)(a-b)}{(a-2)(b-1)} * \frac{(a-2)(b-1)}{ab-2}$ →

→ $a - b = \sqrt{2} + 0{,}8 - \sqrt{2} + 0{,}2 = 1$

2. $(1{,}7 : (1\frac{2}{3}x - 3{,}75)) : \frac{8}{25} = 1\frac{5}{12}$ ➔ $1\frac{2}{3}x - 3{,}75 = \frac{15}{4}$ → $1\frac{2}{3}x = 0$ →

X=0

3. $a_1 = 400$ $d = -5$ $S_{61} = ?$

$S_{61} = \frac{a_1+a_{61}}{2} * 61 = \frac{2*400+60*(-5)}{2} * 61 = 250 * 61 = 15250$

4. $b_4 - b_2 = b_1 * q * (q^2 - 1) = 24$

$b_2 + b_3 = b_1 * q * (q + 1) = 6$ → q-1=4 q=5 ➔ $b_1 = \frac{1}{5}$

5. S= 30 $h_a = 4$ $h_b = 6$ $S = ah$ *formuladan* → a=7,5 b=5

P=2*(7,5+5)=2*12,5=25 sm

33-Bilet

1. $x * \frac{20}{100} = 1$ → x=1*5=5 kg

2. $\frac{2}{x+2} - \frac{2}{4-x} = 1 - \frac{12}{x^2-2x-8}$ → 2x-8+2x+4=$x^2 - 2x - 8 - 12$ → $x^2 - 6x - 16 = 0$

Kvadrat tenglamani yechsak x=8;-2 javoblarni olamiz, lekin x=-2 bo'lganda x+2= 0 bo'lgani uchun , X=8 javobni olamiz.

3. $\left(\frac{2}{\sqrt{3}-1} + \frac{3}{\sqrt{3}-2} + \frac{15}{3-\sqrt{3}}\right) * \left(\sqrt{3}+5\right)^{-1} = \left(\sqrt{3} + 1 - 3\sqrt{3} - 6 + 7{,}5 + 2{,}5\sqrt{3}\right) * \frac{5-\sqrt{3}}{22} =$

0,5*$(\sqrt{3} + 5) * \frac{5-\sqrt{3}}{22}$=0,5

4. *Agar ikkita ko'pburchakning mos burchaklari teng va mos tomonlari nisbati o'zaroteng bo'lsa bunday ko'pburchaklar o'xshash bo'ladi.*

Uchburchaklar tengligining TTT alomati , bir uchburchak tomonlarining ikkin –

@uzimtihon

Chi uchburchak tomonlariga nisbati mos ravishda teng bo'lsa, bunday uchburchaklar o'xshash uchburchaklar deyiladi.

34-Bilet

1. $0{,}12x + 0{,}32x + 14 = x$ → 0,44x +14=x → 0,56x=14 → x=25 ta

2. $\begin{cases} x + y + z = 2 \\ 2xy - z^2 = 4 \end{cases}$ → x=2 y=1 z=0
   X=1 y=2 z=0

3. $\frac{12ab-9b^2}{9b^2-16a^2} = \frac{3b(4a-3b)}{(3b-4a)(3a+4b)} = \frac{-3b}{3a+4b}$.

4. $Muntazam\ uchburchak:\ R = \frac{a}{\sqrt{3}}\quad r = \frac{a}{2*\sqrt{3}}$

   $kvadrat:\ R = \frac{a}{\sqrt{2}}\quad r = \frac{a}{2}$

   $Muntazam\ oltiburchak: R = a\quad r = \frac{a\sqrt{3}}{2}$

5. $a = 13\quad b = 14\quad c = 15\quad S = 84$ 2S=168

$h_1 + h_2 + h_3 = \frac{168}{13} + \frac{168}{14} + \frac{168}{15} = 12\frac{12}{13} + 12 + 11\frac{1}{5} = 36\frac{8}{65}$

35-Bilet

1. $A * \frac{x}{100} * \frac{x}{100} = A * \frac{14400}{10000}$ → $x^2 = 14400$ → x=120 % J:20%

2. $\frac{|x-3|}{x^2-5x+6} \geq 2$ $1.\ \frac{1}{x-2} \geq 2$ x-2≤ $\frac{1}{2}$ → x≤ 2,5

3. $b_1 = 1\quad d = -2$ $b_{11} + b_{6=}2b_1 + 15d$ =2-30=-28

4. $Hamma\ tomonlari\ yeng\ va\ qarama-qarshilari\ parallel\ bo'lgan, qarama-qarshi\ burchaklari\ teng\ bo'lganparallelogramb\ rombdir.\ S = (d_1d_2)/2$

5. $7x + 11x = 360°\quad x = 20°\quad 7x = 140°\quad < a = \frac{7x}{2} = 70°$

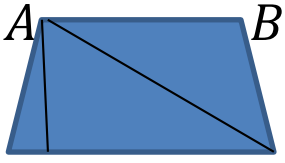
$36 - BILET$

1. $A * \frac{12}{10} * \frac{8}{10} = 0{,}96A$ $4\%\ ga\ kamayadi.$

2. $x^2 + 5y^2 - 4xy + 2x - 6y + 2{,}5$

3. $(x^{-1} + y^{-1}) * (\frac{xy}{x+y})^3 = \frac{x+y}{xy} * \frac{x^3*y^3}{(x+y)^3} = (x^2y^2)/(x+y)^2$

4. $Uchburchakning\ o'rtachizig'i\ asosiga\ parallel\ va\ uning\ yarmiga\ teng.$
   $Uchta\ o'rtachiziq\ yig'indisi\ yarim\ perimetrga\ teng.$

5. 

$Yechish$:

@uzimtihon

C D AH=h HD=8 AD=10 → h=6

H $S=\frac{6+10}{2}*6=48$

37-Bilet

1. $\begin{cases} x+y=1000 \\ 2x+4y=3150 \end{cases} \rightarrow \begin{cases} 2x+2y=2000 \\ 2x+4y=3150 \end{cases}$ → 2y=1150 → y=575 → x=425

2. $b_1+b_5=b_1*(1+q^4)$ $b_2+b_6=b_1q*(1+q^4)$ → q=2

3. $\frac{4^{\frac{2}{3}}*40^{\frac{1}{3}}}{10^{-\frac{1}{3}}}=4*10=40.$

4. *Uchburchak bissektisasi de,uni uchidan chiqib shu burchakni teng ikkiga bo′ − luvchi kesmaga aytiladi.Agar uchburchakning bir uchidan bissektrisa chiqarsak, u ajratgan kesmalar nisbati mos ravishda yon tomonlar nisbatiga teng bo′ladi.*

5. A B X 13 X+7 C D

$X^2+(X+7)^2=169$

$2X^2+14X+49=169$

X^2+7X-60=0 → X=5 → X+5=12

S=a*b=5*12=60

38- Bilet

1. $x+x+1+x+2=x+13$ →2x=10 →x=5 J:5;6;7

2. $\left(\frac{a+b}{\sqrt[3]{a^2}-\sqrt[3]{b^2}}+\frac{\sqrt[3]{ab^2}-\sqrt[3]{a^2b}}{\sqrt[3]{a^2}-2\sqrt[3]{ab}+\sqrt[3]{b^2}}\right):\left(\sqrt[6]{a}-\sqrt[6]{b}\right)=\sqrt[3]{ab}$

3. $\frac{1}{2}+\frac{1}{24}+\frac{1}{48}+\frac{1}{80}+\frac{1}{120}+\frac{1}{168}=\frac{1}{2}+\frac{1}{2}\left(\frac{1}{4}-\frac{1}{14}\right)=\frac{1}{2}\left(1+\frac{5}{28}\right)=\frac{1}{2}*\frac{33}{28}=\frac{33}{56}$

4 Pifagor teoremasi : $c^2=a^2+b^2$

5. $\begin{cases} 8x+15y=162 \\ 5x-7y=3 \end{cases}$ → y=6→ x=9

39-Bilet

1. $2x+3x+5x=120$ → 10x=120 → x=12 24;36;60

2. $\frac{x^2-3x+9}{x^3+27}+\frac{x-3}{x^2-9}-\frac{x+5}{x+3}=\frac{1+1-x-5}{x+3}=\frac{-(x+3)}{x+3}=-1$

3. $v_1*t_1=v_2*t_2$

(v+16)(1200+t)=v*t

V=50 km/h

@Uzimtihon

4.Uchburchak yuzi formulasi: $S=\frac{a*h}{2}$

5. 7x-3x=12 → x=3 21;9

40-Bilet

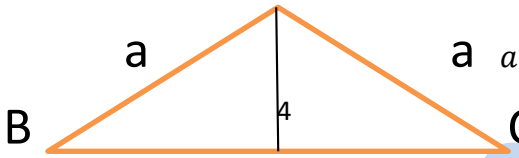
1. $\begin{cases} x+y=50 \\ 5x+7y=300 \end{cases}$ → 2y=50 → y=25 → x=25

2. $\frac{1-x}{2}+3<3x-\frac{2x+1}{4}$ → 15-12x<0 12x>15 $x>1\frac{1}{4}$

3. $\frac{a-a\sqrt{a}}{\sqrt[3]{a^2+\sqrt[6]{a^5}+a}}-\frac{\sqrt[3]{a^2}-a}{\sqrt[3]{a}+\sqrt{a}}-2\sqrt[3]{a}=a$

4. *Qarama – tomnlari teng va parallel, qo'shnitomonlari esa perpendikulyar bo'lgan to'rtburchak to'g'rito'rtburchak deyiladi. diogonallari teng va kesi – shish nuqtasida teng ikkiga bo'linadi.*

qarshi 5.



Yechish:

$a=\sqrt{4^2+8^2}=\sqrt{16+64}=4\sqrt{5}$ $S=\frac{16*4}{2}=32$

$R=\frac{4\sqrt{5}*4\sqrt{5}*16}{4*32}=10$

@uzimtihon

@uzimtihon

@uzimtihon