

TOSHKENT TO'QIMACHILIK VA YENGIL SANOAT INSTITUTI

“Informatsion texnologiyalar” kafedrası

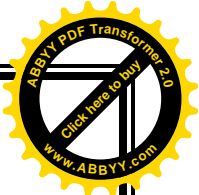
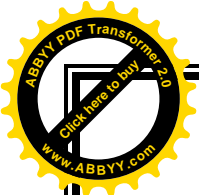


KURS ISHI

**MAVZU: Excel elektron jadval dasturida Kramer usuli
bilan tenglamalar tizimini yechish .**

**7-15 guruh talabasi
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Kurs ishi rahbari:Sobirov N.**

Toshkent 2016



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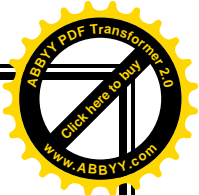
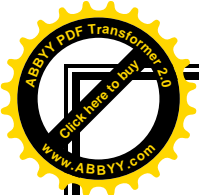
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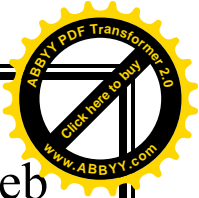
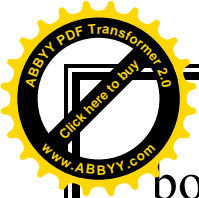


KIRISH

Kupchilik hollarda qayta ishlanadiga ma'lumotlarni jadvallar ko'rinishida tasvirlaymiz. Shuning uchun jadval katakchalarining bir qismiga boshlang'ich ma'lumotlar va boshqa qismiga esa hosil qilinadigan hosilaviy ma'lumotlar yoziladi. Masalan: o'quvchilarning kunlik tergan paxtasi uchun mexnat haqini hisoblash talab qilinsin, u holda terilgan paxta miqdori $-A$, bir birlik (1 kg) paxta uchun to'lanadigan ish haqi bahosi (sumda) $-B$, boshlang'ich ma'lumot sifatida va har bir o'quvchining bir kunlik jami tergan paxtasi uchun ish haqi miqdori (summasi) hosilaviy ma'lumot bo'lib hisoblanadi.

Katta hajmli tekshirish natijalarini jadval ko'rinishida tasvirlash maqsadiga muvofiqdir. Ma'lumotlarni jadval ko'rinishida tasvirlash ularni taxlil qilishni ancha soddalashtiradi. Shuning uchun kupchilik hollarda hisob-kitoblar samaradorligi va sifatini oshirish uchun avtomatlashtirilgan hisoblashlarni joriy qilish maqsadga muvofiqdir.

Jadval ko'rinishida tasvirlanadigan masalalarni echish uchun maxsus amaliy dasturlar paketi ishlab chiqilgan



bo'lib ular elektron jadvallar yoki jadval protsessori deb ataladi.

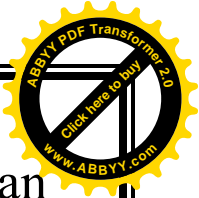
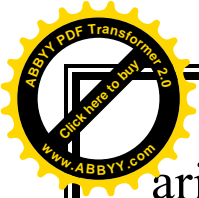
Elektron jadvallar avvalo iqtisodiy masalalarni echish uchun mo'ljallangan, lekin uning yordamida injenerlikka doir masalalarni bajarishda ham, masalan, formulalar bo'yicha hisob-kitoblar muvaffaqiyatli ishlatilmoqda.

Elektron jadvallar qo'llanilayotgan sohalar juda ko'p, masalan: moliyaviy, buxgalteriyaga oid, xususan ish haqini hisoblash, har xil iqtisodiy-texnik hisoblar, kundalik ho'jalik tovarlari va mahsulotlarni sotib olish va xokazolar.

Excel Microsoft Office paketi tarkibidagi programma bo'lib, u Windows operatsion sistemasi boshkaruvida ishlovchi hamda ma'lumotli elektron jadvallarni tayyorlash va qayta ishlashga muljallangan.

Excel da tayyorlangan har bir xujjat (ma'lumotli jadval) ixtiyoriy nom va .XLS kengmaytmadan iborat fayl buladi. Excel da odatda bunday fayl "Ish kitobi" (Workbook) deb yuritiladi.

Microsoft Excel ning asosiy ish soxasi - bu "Ish kitobi" bo'lib, u bir yoki bir nechta ish varaqlardan iborat. Ish varagida buxgalter (hisobchi) kitobi kabi, sonlar, matnlar,



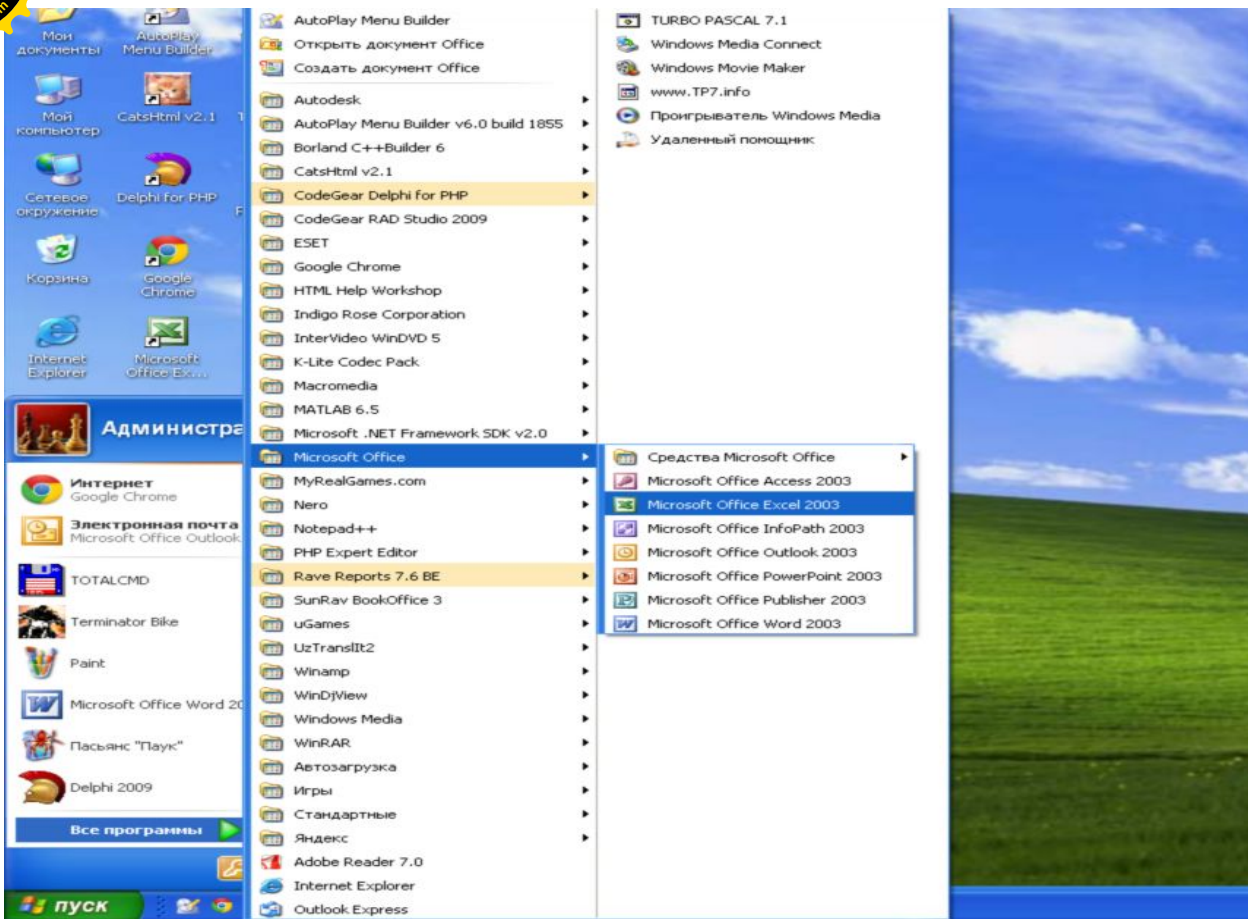
arifmetik ifodalar, hisoblar qator va ustunlarda joylashgan buladi. Excel ning buxgalter kitobidan asosiy farki barcha hisob ishlarini uning uzi bajaradi, lekin ma'lumotlarni kiritish foydalanuvchi zimmasida qoladi.

Excel dasturini yuklash va unda ishni tugatish.

MS Excel 2003 dasturini yuklashdan oldin Windows XP operatsion tizimini yuklash lozim. Bu esa sodda, ya'ni hozirgi paytda kompyuter yuklanishi bilan amalga oshadi.

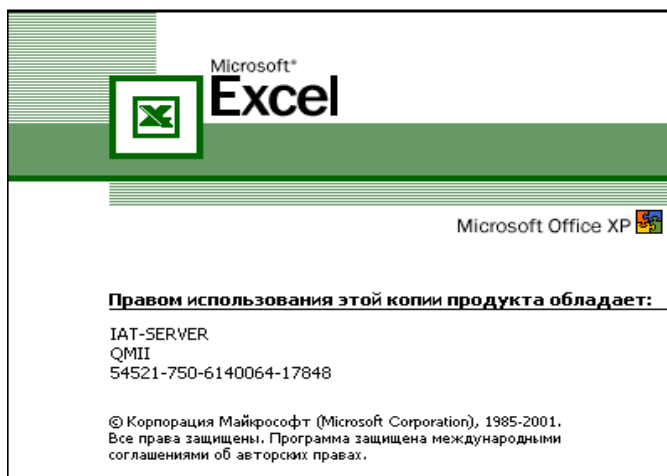
Excel dasturini yuklash jarayoni qo'yidagicha:

Sichqoncha kursatkichi ekranning qo'yi tomonida joylashgan Pusk (Start) tugmachasiga keltirilib chap tugmasi bosiladi. Natijada ekranda bosh menyu hosil bo'ladi. (1 – rasm).

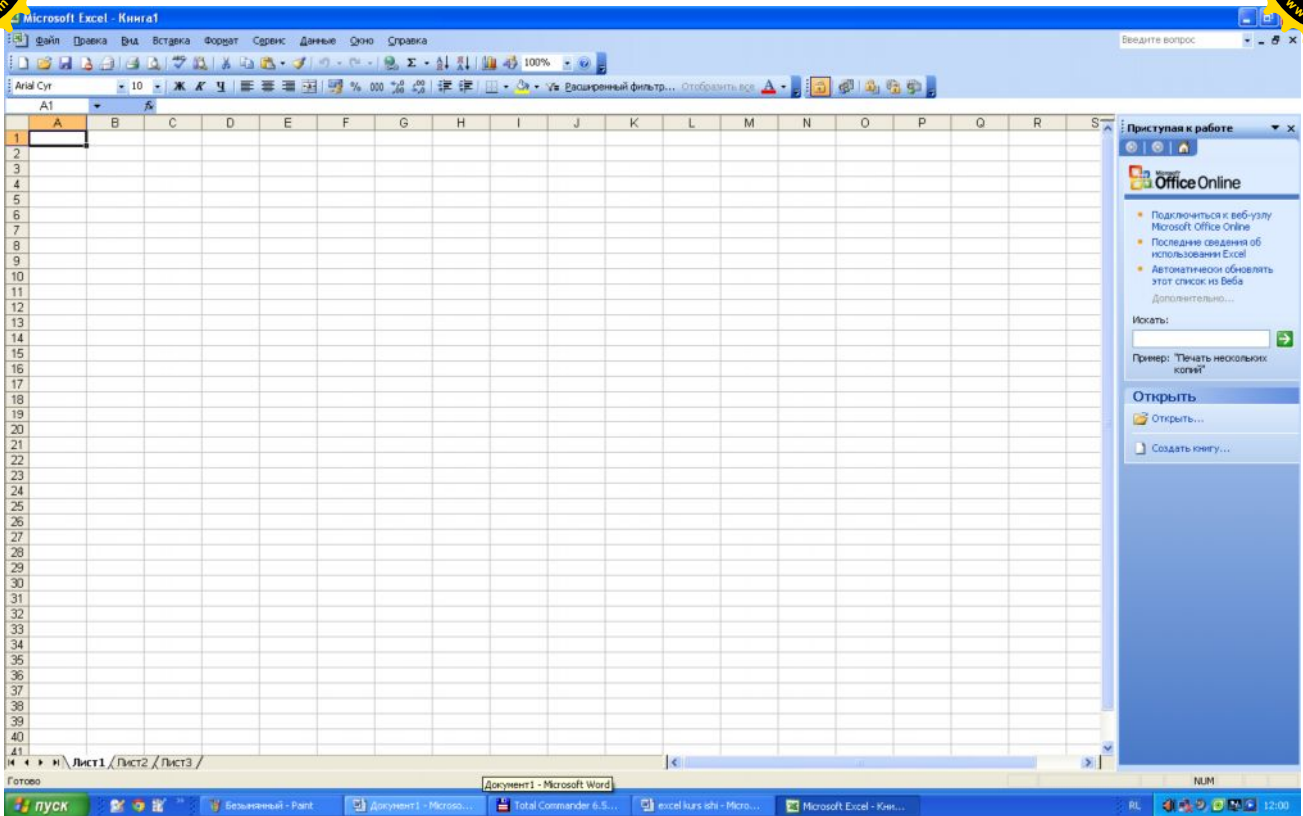


1 – rasm.

Bosh menyuning programm bo'limidan Microsoft Excel bandini tanlanadi va sichqonchanning chap tugmachasi bosiladi natijada Microsoft Excel dasturining zarvarag'i ekranga chiqadi, (2-rasm)




2- rasm

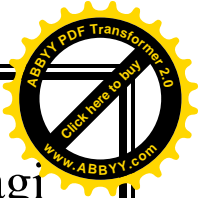
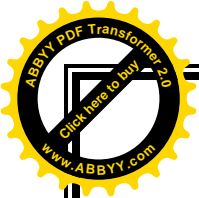


3- rasm

sungra Microsoft Excel dasturining ish oynasi ekranga chiqadi (3-rasm).

Microsoft Excel dasturidan chiqishning bir necha yo'llari mavjud bo'lib bo'lardan ayrimlarini ko'ramiz.

1. Tizimli tugmalardan  - yopish tugmasini sichqonchanning chap tugmasini bosish orqali dasturdan chiqishimiz mumkin.
2. Fayl menyusiga kirib **ВЫХОД** buyrug'ini tanlab ham dasturdan chiqishimiz mumkin.
3. Klaviatura orqali esa **Alt + F4** tugmalarini birgalikda bosish orqali dasturdan chiqishimiz mumkin



Microsoft Excel dasturining ish oynasi qo'yidagi qismlardan tashkil topgan

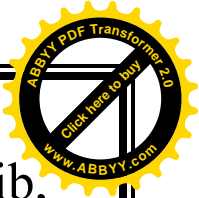
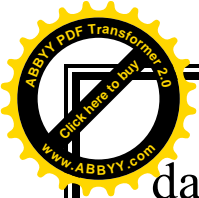
SARLOVHA SATRI -oynaning eng yuqoridagi qismi. Bu satrda dastur belgisi, fayl nomi va dastur nomi, oynaning uchta asosiy tugmalari joylashgan buladi. Shu satrga sichqoncha bilan bosib turib, harakatlantirsak, u holda oynani ekranda joyini o'zgartirish mumkin.

MENYU SATRI - oynaning bu satri asosan sarlovha satri tagida joylashadi va shu satr yordamida dasturning hamma buyruqlari bilan ishlashimiz mumkin, chunki bu satrda hamma buyruqlar saralanib guruxlarga bulingan.

USKUNALAR SATRI - oynaning uchinchi va to'rtinchi satri bulib bu satrda yordamchi kurollar (asboblar) tugmalari joylashgan, ular yordamida dasturning har xil asosiy va ko'p ishlatiladigan buyruqlarni tezkor bajarishimiz mumkin.

FORMULALAR QATORI – bo' qatorga formulalar kiritiladi

ISH SOHASI - oynaning asosiy qismi bulib uning ichida dastur bajariladi va ma'lumotlar kursatiladi. Excel



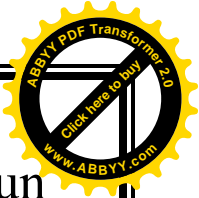
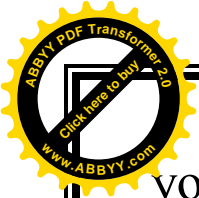
dasturining ish sohasi elektron jadvaldan iborat bo'lib, shuning uchun Excel elektron jadval ham deb yuritiladi

MA'LUMOTLAR SATRI - oynaning eng pastki satri. Bu satrda har xil kushimcha ma'lumotlar kursatiladi

OYNA CHEGARALARI - oynaning turt tomonida joylashgan kalinchizikli sohalar. Ularni sichqoncha yordamida bosib turib siljitsak natijada oynani xajmini uzgaradi (chuziladi, kattalashadi yoki kichkinalashadi).

KURIB CHIQISH CHIZGICHLARI - oynaning ung va pastki qismlarda joylashgan sohalar. Ular yordamida oyna ichidagi ma'lumotlarni tulik kurib chiqish mumkin., buning uchun shu sohalardagi ustki yoki pastki, chap yoki ung tomondagi strelkalarni bosish kerak yoki shu sohalarda joylashgan turtburchak kursatkichni kuzgaltirish kerak.

Excel elektron jadvali 65536 qator (row) va 256 ustun (column)dan iborat. Qatorlar 1dan 65536 gacha bo'lgan butun sonlar bilan tartiblangan, ustunlar esa lotin alifbosining bosh xarflari (A, B, Z, AA, AB, IV) bilan belgilangan. Qator va ustun kesishmasida elektron jadvalning asosiy tarkibiy elementi – katak (yacheyka) (cell) joylashgan. Har bir katak (yacheyka)ga son, matn



yoki formula tarzidagi ma'lumotlar kiritiladi. Ustun kengligini va qator balandligini o'zgartirish ham mumkin.

Jadvalning tanlangan katagiga o'tish uchun aniq manzil (adres) ko'rsatilishi kerak. U qator va ustun kesishmasida, masalan A1, B4, F9, AB3 kabi ko'rsatiladi.

2. Microsoft Excelda formula va funktsiyalar bilan ishlash.

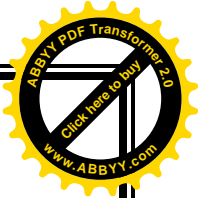
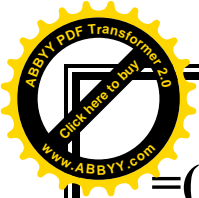
Excel EJ kataqlaridagi ma'lumotlar - matnlar, sonlar va formulalar bilan tuldiriladi. Ba'zan katakdagi qiymatlar ustida ayrim hisoblashlarni bajarish zaruriyati tugiladi, bunday hollarda formulalardan foydalaniladi.

Umuman ixtiyoriy yacheykadagi sonlarni hisoblash yoki formulalarni hisoblash uchun “=” (*tenglik*) belgisidan foydalanadi.

Masalan, A5 yacheykadagi sonni D7 yacheykadagi songa ko'paytirish uchun kerakli kattakka quyidagicha yoziladi;

=A5*D7.

$\sin x^2 + \ln x + 7,5$ ifodani x – ning kiymati **B6** yacheykada turganda quyidagicha yozib hisoblanadi;



$$=(\sin(B6^2)+\ln(B6)+7,5)$$

Excelda ishlatiladigan arifmetik amallar belgilari quyidagilar:

+ – *qo'shish*;

– - *ayirish*;

* – *ko'paytirish*;

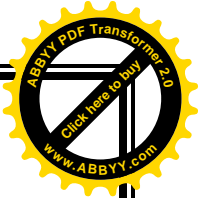
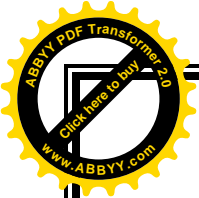
/ – *bo'lish*;

^ – *darajaga ko'tarish*

& - *bir necha kattakdagi matnlarni birlashtirish* .

Excel dasturida funktsiyalarni ham hal qilish mumkin. Buning uchun **Вставка** menyusidan **Функция** buyrug'ini tanlaymiz. Natijada ekranda “funksiyalar ustasi” oynasi hosil bo'ladi. Ushbu oynadan foydalanib kerakli funktsiyani echimini olish mumkin.

Exceldagi asosiy matematik, statistik va mantiqiy funktsiyalar quyidagilar:



Matematik funksiyalar

PRODUCT (<argumentlar ruyxati> (ПРОИЗВЕД) - argument qiymatlarini ko'paytmasini hisoblaydi;

SQRT (son) (ildiz) - sonning kvadrat ildizini hisoblaydi;

FACT (son) (ФАКТОР) - argument sifatida berilgan butun songacha bo'lgan natural sonlar ko'paytmasini hisoblaydi;

RAND (tasodifiy son) - 0 va 1 oraliqdagi tasodifiy sonni hisoblaydi.

ABS (son) - argument qiymatining modulini hisoblaydi;

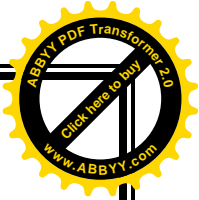
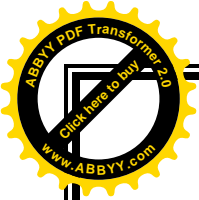
LN (son) - sonning natural logarifmini aniqlaydi;

EXP (son) - sonning eksponentasini hisoblaydi;

SIN (son) - sonning sinusini hisoblaydi;

COS (son) - sonning kosinusini hisoblaydi;

TAN (son) - sonning tangensini hisoblaydi (radianda);



Statistik funksiyalar

AVERAGE (<argumentlar ruyxati>) - barcha argumentlar qiymatining o'rtta arifmetigini hisoblaydi;

MAX (<argumentlar ruyxati>) - argumentlar ruyxatidan eng kattasi (maksimal son)ni topadi;

MIN (<argumentlar ruyxati>) - argumentlar ruyxatidan eng kichigi (minimal son)ni topadi;

SUM (<argumentlar ruyxati>) - barcha argumentlar qiymatining yigindisini hisoblaydi.

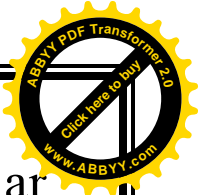
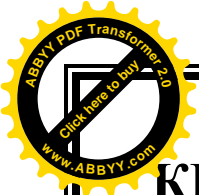
ДИСП(<argumentlar ruyxati>) barcha argumentlar uchun dispersiyasini hisoblaydi.

ДОВЕРИТ(a;b; n)

a - ishonchlilik darajasi uchun tanlab olingan qiymat. Masalan, a 0 ga teng bo'lsa ishonchlilik 100% ni tashqil qiladi, agar a 0,05 bo'lsa ishonchlilik darajasi 95% ni tashqil qiladi

b - tanlab olingan tajriba natija to'plami uchun o'rtacha farqlanish bo'lib, oldindan ma'lum deb faraz qilinadi.

n - tanlanmadagi elementlar soni.



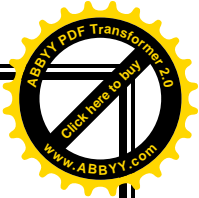
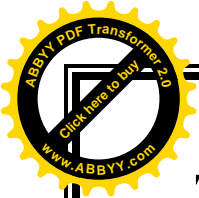
КВАДРОТК (<argumentlar ruyxati>) barcha argumentlar uchun kvadrat farqlanishni aniqlaydi.

Mantiqiy funktsiyalar

Ayrim amaliy masalalarni yechishda hisoblashlar u yoki bu shartlarga bog'liq bulishi mumkin. Bunday holatda IF shartli funktsiyasidan foydalanish mumkin. Bu funktsiyaning formati qo'yidagicha:

IF (<mantikiy ifoda>;1-ifoda;2-ifoda)

Uning ishlash printsipi qo'yidagicha:<mantiqiy ifoda>ning qiymati “chin” (1) bulsa 1-ifoda, “yolg'on” (0) bulsa <2-ifoda> bajariladi.



Tenglamalar sistemasini Kramer usuli bilan yechish.

Faraz qilaylik birinchi darajali, ikkita noma'lumli ikkita algebraik tenglamalar sistemasi berilgan bo'lsin:

$$\begin{cases} a_{11}x_1 + a_{12}x_2 = b_1 \\ a_{21}x_1 + a_{22}x_2 = b_2 \end{cases} \quad (1)$$

(1) sistemaning 1-tenglamasini a_{22} ga, 2-tenglamasini $-a_{12}$ ga ko'paytirib qo'shsak

$$(a_{11}a_{22} - a_{12}a_{21})x_1 = b_1a_{22} - b_2a_{12} \quad \Bigg) \quad x_1 = \frac{b_1a_{22} - b_2a_{12}}{a_{11}a_{22} - a_{12}a_{21}} \quad (2)$$

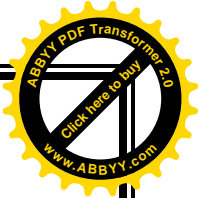
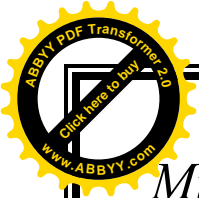
Agar (1) sistemaning 1-tenglamasini $-a_{21}$ ga, 2-tenglamasini a_{11} ga ko'paytirib qo'shsak

$$(a_{11}a_{22} - a_{12}a_{21})x_2 = b_2a_{11} - b_1a_{21} \quad \Bigg) \quad x_2 = \frac{b_2a_{11} - b_1a_{21}}{a_{11}a_{22} - a_{12}a_{21}} \quad (3)$$

(2) va (3) larga e'tibor bersak ikkinchi tartibli determinantning ta'rifiga ko'ra

$$x_1 = \frac{\begin{vmatrix} b_1 & a_{12} \\ b_2 & a_{22} \end{vmatrix}}{\begin{vmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{vmatrix}} = \frac{\Delta_1}{\Delta}; \quad x_2 = \frac{\begin{vmatrix} a_{11} & b_1 \\ a_{21} & b_2 \end{vmatrix}}{\begin{vmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{vmatrix}} = \frac{\Delta_2}{\Delta}; \quad (4)$$

(4) ga Kramer formulasi deyiladi.



Misol.

$$1) \begin{cases} 2x + 5y = 8 \\ 3x + y = -1 \end{cases} \quad (x=-1; u=2), \quad 2) \begin{cases} 5x - 3y + 2z = 9 \\ 2x + 2y - 5z = 3 \\ 2x - y - 3z = 7 \end{cases}, \quad (x=1; y=-2; z=-1).$$

Agar uch noma'lumli bir jinsli ikkita tenglamalar sistemasi

$$\begin{cases} a_1x + b_1y + c_1z = 0 \\ a_2x + b_2y + c_2z = 0 \end{cases}$$

berilgan bo'lib,

$$\Delta_1 = \begin{vmatrix} b_1 & c_1 \\ b_2 & c_2 \end{vmatrix}, \quad \Delta_2 = \begin{vmatrix} c_1 & a_1 \\ c_2 & a_2 \end{vmatrix}, \quad \Delta_3 = \begin{vmatrix} a_1 & b_1 \\ a_2 & b_2 \end{vmatrix}$$

determinantning loaqal bittasi noldan farqli bo'lsa, u holda sistemaning barcha yechimlari

$$x = \Delta_1 t, \quad y = \Delta_2 t, \quad z = \Delta_3 t$$

formula bilan aniqlanadi. (t-ixtiyoriy son).

$$\begin{cases} a_1x + b_1y + c_1z = 0 \\ a_2x + b_2y + c_2z = 0 \\ a_3x + b_3y + c_3z = 0 \end{cases}$$

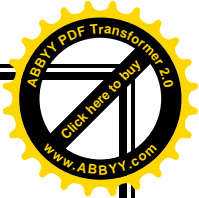
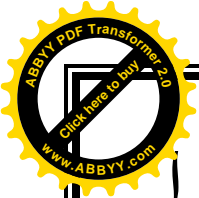
Bu sistemada $\Delta \neq 0$ bo'lsa, $x=0, u=0, z=0$ lar sistemaning yagona yechimi bo'ladi.

Agar $\Delta = 0$ bo'lsa, cheksiz ko'p yechimi bo'ladi.

Misol.

$$1) \begin{cases} 3x - 5y + z = 0 \\ x + 2y - z = 0 \end{cases} \quad (x=3t; u=4t; z=11t),$$

$$2) \begin{cases} x - y - z = 0 \\ x + 4y + 2z = 0 \\ 3x + 7y + 3z = 0 \end{cases} \quad (x=2t; y=-3t; z=5t).$$



$$a_1x + b_1y = c_1$$

$$a_2x + b_2y = c_2$$

Ikki o'zgaruvchili chiziqli tenglamalar sistemasining umumiy ko'rinishi

Yechish usullari: 1) O'rniga qo'yish usuli

2) Qo'shish usuli

3) Grafik usuli

Bu usullar bilan yechish maktab dasturida bor. Biz dasturda yo'q Kramer usuli haqida to'xtalmoqchimiz.

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$$a_1x + b_1y = c_1$$

$$a_2x + b_2y = c_2$$

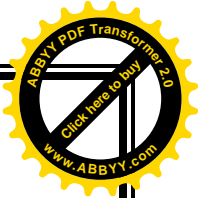
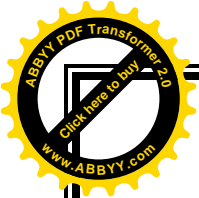
Ikki o'zgaruvchili chiziqli tenglamalar sistemasining umumiy ko'rinishi

Yechish usullari: 1) O'rniga qo'yish usuli

2) Qo'shish usuli

3) Grafik usuli

Bu usullar bilan yechish maktab dasturida bor. Biz dasturda yo'q Kramer usuli haqida to'xtalmoqchimiz.



Bitta usul bilan 100 misol yechkandan ko'ra 100 usul bilan bitta misol yechkan afzaldir.

$$\begin{cases} a_1x + b_1y = c_1 \\ a_2x + b_2y = c_2 \end{cases}$$
 Sistemani Kramer usuli bilan yechkanda sistema kofesentlardan tuzulgan sistemaning determinantlari deb ataluvchi quydagi ifodalar tuzuladi:

$$D = \begin{vmatrix} a_1 & b_1 \\ a_2 & b_2 \end{vmatrix} \quad D_x = \begin{vmatrix} c_1 & b_1 \\ c_2 & b_2 \end{vmatrix} \quad D_y = \begin{vmatrix} a_1 & c_1 \\ a_2 & c_2 \end{vmatrix}$$

$$x = \frac{D_x}{D}, y = \frac{D_y}{D}$$

Determinantlarni hisoblash quydagicha

$$D = \begin{vmatrix} a_1 & b_1 \\ a_2 & b_2 \end{vmatrix} = a_1 \cdot b_2 - b_1 \cdot a_2 \text{ qolganlari ham shunday hisoblanadi}$$

Aytilganlarni misol yechishda ko'rsatamiz

$$\begin{cases} 6x + y = 6 \\ 4x + 3y = 11 \end{cases} \quad \begin{vmatrix} 6 & 1 \\ 4 & 3 \end{vmatrix} \quad \begin{vmatrix} 6 & 1 \\ 11 & 3 \end{vmatrix}$$

$$D = 6 \cdot 3 - 1 \cdot 4 = 18 - 4 = 14 \quad D_x = 6 \cdot 3 - 1 \cdot 11 = 18 - 11 = 7$$

4 3
11 3

$$D_y = \begin{vmatrix} 6 & 6 \\ 4 & 11 \end{vmatrix} = 6 \cdot 11 - 6 \cdot 4 = 66 - 24 = 42$$

$$x = \frac{D_x}{D} = \frac{7}{14} = \frac{1}{2} \quad y = \frac{D_y}{D} = \frac{42}{14} = 3 \quad \text{javob: } \left(\frac{1}{2}, 3\right)$$

Bu usul bilan quydagi holler bo'lishi mumkin:

1. $D \neq 0, D_x \in R, D_y \in R$ bu holda bitta yechim bo'ladi
2. $D = 0, D_x \neq 0, D_y \neq 0$ bu holda yechim bo'lmaydi
3. $D = D_x = D_y = 0$ bu holda yechim cheksiz ko'p bo'ladi
- 4. Arifmetik ifodalarni Excel elektron jadvalida matematik funksiyalaridan foydalanib hisoblash**

$$Z = \sqrt[5]{2x + t^3 + y^3} + \frac{\cos^2(t^3 + 2x + y^3)}{[t^3 + 2x + y^3]^3} + 3,21$$

x	y	t	Z
1,0	1,2	1,5	
4			
1,1	1,5	1	
2			
0,1	2,1	2.5	
1			

Ushbu funktsiyana Excel electron jadval protsessorida hisoblash ketma ketligi quyidagicha:

1. Berilgan x, y va t larga qiymat bering.
2. a ning qiymatini hisoblash uchun D11 katagiga ko'rsatilgan formulani kiritib, Enter tugmachasi bosiladi. Keyingi qiymatlar hisoblash ham xuddi shunday bajariladi.

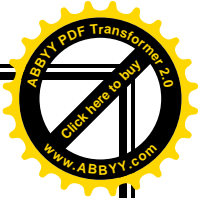
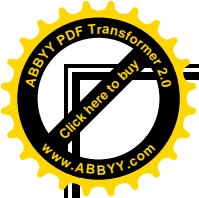
Microsoft Excel - arefmetik ifoda

Файл Правка Вид Вставка Формат Сервис Данные Окно Справка

Q6

	A	B	C	D	E	F	G	H	I	J	K	L	M
1													
2	$Z = \sqrt[5]{2x+t^3+y^3} + \frac{\cos^2(t^3+2x+y^3)}{(t^3+2x+y^3)^3} + 3,21$												
3													
4	Ushbu Z funktsiyani qiymatlarini hisoblash uchun avval quyidagi belgilashlarni kiritamiz.												
5													
6	$a = 2x + t^3 + y^3; \quad b = \sqrt[5]{a}; \quad c = \cos^2 a; \quad d = (a)^3;$												
7	Belgilashlardan so'ng funktsiyaning ko'rinishi quyidagicha buladi												
8	$Z = b + \frac{c}{d} + 3,21$												
9													
10	x	y	t	a	b	c	d	z					
11	1,04	1,2	1,5	7,183	1,483409901	0,788514	370,6103975	4,6955375					
12	1,12	1,5	2	13,615	1,685790217	0,706229	3523,788383	4,89607					
13	0,11	2,1	2,5	25,106	1,905265506	0,999821	1824,59389	5,1153287					
14													
15													
16	=2*A11+C11^3+B11^3								=E11+F11/G11+3,21				
17													
18	=EXP((1/5)*LN(D11))								=КОРЕНЬ(COS(D11))				
19													
20													
21													

4- rasm



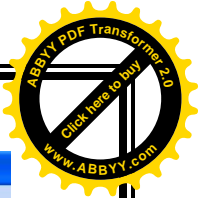
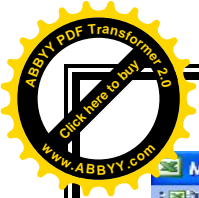
5. Yig'indi va ko'paytmani Excelda hisoblash/

$$1. \quad S = \sum_{n=1}^m \frac{n^2 x^3}{(2n+1)^3} \quad x=1,46 \quad m=10$$

$$2. \quad P = \prod_{n=1}^m \frac{n + x^{n-1}}{n^3 + n - 1} \quad x=3,21 \quad m=11$$

Vazifa quyidagi tartibda bajariladi:

1. Birinchi misolni yechish uchun uchta ustun tanlanadi va ularga yig'indining o'zgarish parametri nomini (n), ikkinchisiga esa x o'zgaruvchining qiymatlari va uchunchisiga S ning har bir qiymatidagi hisoblanish belgilanadi.
2. Birinchi ustunga N ning qiymatlari kiritiladi.
3. Ikkinchi ustunga X ning qiymati kiritiladi.
4. Uchunchi ustuniga S ning har bir qiymatidagi hisoblanish uchun $=B6^2 * C6^3 / (2 * B6 + 1)^3$ formulasini kiritib, Enter tugmasi bosiladi.
5. Yig'indini hisoblash uchun $=CYMM(D6:D15)$ formulani kiritib enter tugmasi bosiladi.



Microsoft Excel - Yig'indini hisoblash

Файл Правка Вид Вставка Формат Сервис Данные Окно Справка

Arial Cyr 10 Ж К У

M15

1 Berilgan ushbu yig'indini Excel dasturida hisoblash

2

3
$$S = \sum_{n=1}^m \frac{n^2 x^3}{(2n+1)^3}$$
 x=1,46; m=10;

4 =B6^2*C6^3/(2*B6+1)^3

n ning qiymatlari	x ning qiymati	S ning qiymatlari
1	1,46	0,1152643
2	1,46	0,09958835
3	1,46	0,08165955
4	1,46	0,06830477
5	1,46	0,05845485
6	1,46	0,0509954
7	1,46	0,0451836
8	1,46	0,04054075
9	1,46	0,03675215
10	1,46	0,03360475
Summa S		0,63034847

15 =СУММ(D6:D15)

5- rasm

Ikkinchi vazifa ham xuddi shunday bajariladi.

Ko'paytmani hisoblash uchun =ПРОИЗВЕД(D6:D16) formulani kiritib enter tugmasi bosiladi.

Microsoft Excel - Yig'indini hisoblash

Файл Правка Вид Вставка Формат Сервис Данные Окно Справка

Arial Cyr 10 Ж К У

M7

1 Berilgan ushbu ko'paytmani Excel dasturida hisoblash

2

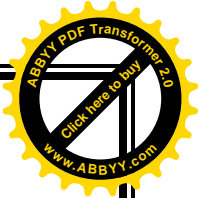
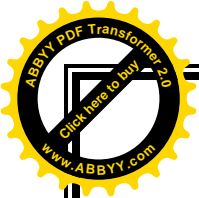
3
$$P = \prod_{n=1}^m \frac{n + x^{n-1}}{n^3 + n - 1}$$
 x=3,21 m=11

4 =(B6+EXP((B6-1)*LN(C6)))/(B6^3+B6-1)

n ning qiymatlari	x ning qiymati	P ning qiymatlari
1	3,21	2
2	3,21	0,578888889
3	3,21	0,458762069
4	3,21	0,553375537
5	3,21	0,86181765
6	3,21	1,569321586
7	3,21	3,154820706
8	3,21	6,781973197
9	3,21	15,30803192
10	3,21	35,8735309
11	3,21	86,62887434
ПРОИЗВЕД (P)		404619,5925

16 =ПРОИЗВЕД(D6:D16)

6- rasm



6. Tenglamalar tizimini Excelda yechish.

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

Tenglamalar tizimini Excel elektron jadval protsessorida yechish ketma-ketligi quyidagicha:

1. A matritsa elementlarini elektron jadvalga kiritamiz.
2. B vector elementlarini elektron jadvalga kiritamiz.
3. A-1 teskari matritsa topish uchun:
 - 3.1. A matritsa elementlarini ajratib, CTRL tugmasini bosgan holda elektron jadvaldan A-1 teskari matritsa elementlari chiqishi kerak bo'lgan joylarni ham ajratamiz. Sungra, “Вставка функции (fx)” piktogrammasini bosib, muloqot oynasining kategoriyalar bo'limidan matematika keyingi darchadan МОБР funksiyasini tanlab, OK tugmasini bosamiz.
 - 3.2. Yana A matritsa elementlarini ajratib massiv adresini aniqlab, va CTRL+Shift+Enter tugmalarini barobar bosamiz *(rasmlarda bu jarayon ko'rsatilgan). Natijada A^{-1} teskari matrisa elementlari hosil bo'ladi.

	A	B	C	D	E	F	G	H	I	J	K	L	M
1													
2													
3		2	-1	2			-1			0,625	0,125	-0,375	
4	A=	1	2	-1		B=	3		A ⁻¹ =	-0,5	0,5	0,5	
5		1	-1	3			2			-0,375	0,125	0,625	
6													
7													
8													

7- rasm

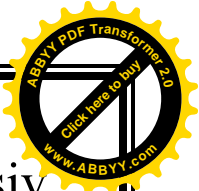
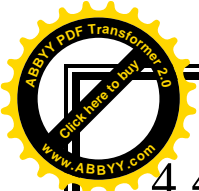
4. A^{-1} teskari matrisa elementlarini b vektor elementlariga ko'paytiramiz.

Ushbu amallarni bajarish natijasida koordinatalari sistemaning echimlari bo'lgan X vektor topiladi.

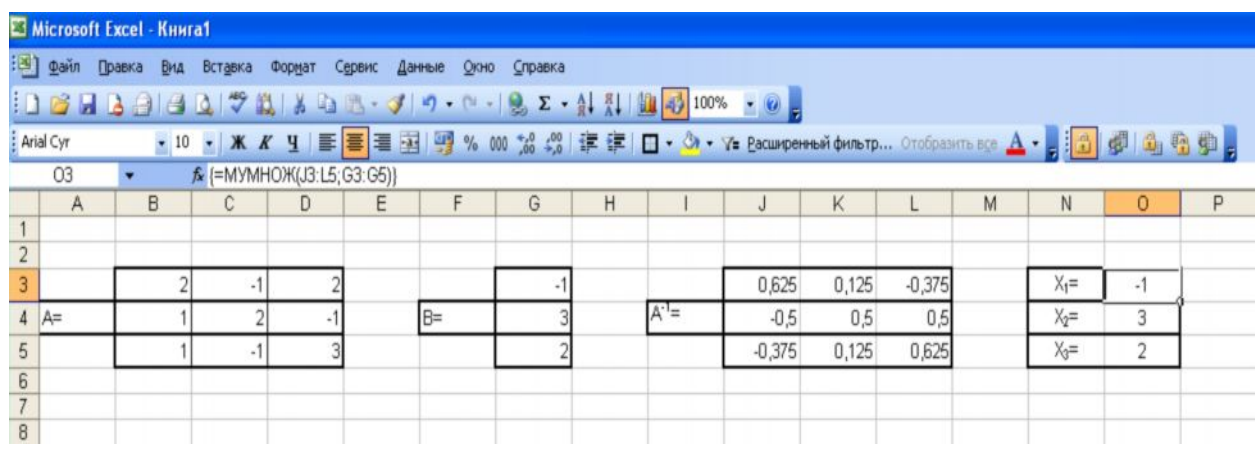
4.1. A-1 teskari matritsa elementlarini ajratamiz.

4.2. Ctrl tugmasini bosgan holda B vector elementlari keyin hisoblanishi kerak bo'lgan X vector elementlarini ajratamiz.

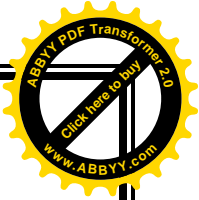
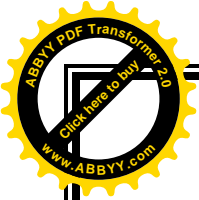
4.3. “Вставка функции” (fx) piktogrammasini bosib muloqot oynasining kategoriyalar bo'limidan matematika, keyingi darchadan МУМНОЖ funksiyasini tanlab OK tugmasi bosiladi.



4.4. Oldin A^{-1} matritsa elementlarini sungra b massiv elementlarini belgilab Ctrl+Shift+Enter tugmalari baravar bosiladi.



8- rasm

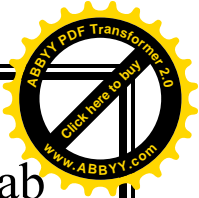
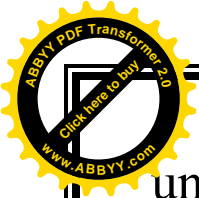


XULOSA

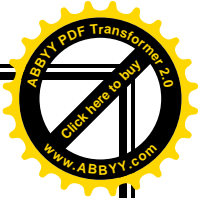
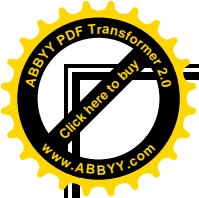
Hozirgi kunda har bir yetuk mutaxasis bo'lishni istovchilar albatta zamonaviy axborot texnologiyalardan habardor bo'lishi, yangi texnologiyalardan samarali foydalana olishini bilishi muhim ahamiyatga egadir. Shuning uchun ham ish yuritishda kompyuter savodhoni bo'lish zarur hisoblanadi.

Yuqoridagi ma'lumotlarda biz MS Excel amaliy dastur paketining keng imkoniyatlaridan foydalangan holda misol va masalalarni yechish qulay va tez bajarilishini, shuningdek, hisob kitob ishlarining qanday bajarilishi katta ahamiyatga molik ekanligini qisqa misollarda bo'lsada, aks ettirishga harakat qildik. Asosiy mavzu Excel elektron jadval dasturi yordamida amaliy masalalarni yechish haqida bo'lsa ham, boshqa toifadagi qo'shimcha misollar, hisoblashlar, grafiklar va diagrammalar qurish va ularning bajarilish ketma ketligi tartibi bilan ko'rsatib o'tilgan.

Xulosa qilib shuni aytish mumkinki, yuqorida biz Excel dasturining bir qismini o'rgangan bo'lsakda, uning imkoniyatlari qanchalik kengligiga guvoh bo'ldik va Excel dasturi hisob kitoblarni aniq, tushunarli bajaribgina qolmay,



undagi imkoniyatlar foydalanuvchilar uchun ko'plab qulayliklar va ish samaradorligining yanada oshishiga xizmat qiladi.



Foydalanilgan adabiyotlar ro'yxati:

1. *M.M.Aripov, J.O`Muhammadiev "Informatika, Informatsion texnologiyalar" (Lotin imlosida) Oliy o`quv yurtlari uchun darslik. Toshkent -2005 yil. 276 b.*
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