**LABORATORY WORK 2**

**>>** % **Let’s solve the system of equations:**

**>>** % 2\*X1+3\*X2+4\*X3=29

**>>** % X1+X2+2\*X3=13

**>>** % 3\*X1+2\*X2+X3=16

**>>** % Let’s use **CRAMER’S METHOD**

>> A=[2 3 4;1 1 2;3 2 1] %matrix А

A =

 2 3 4

 1 1 2

 3 2 1

>> B=[29;13;16] %matrix-column В

B =

 29

 13

 16

**>>** % Let’s get the determinant **delta in Octave**

>>delta=det(A) % the determinant of A

delta = 5

**>>** % Let’s get the determinant **deltaX1**

**>>**deltaX1=det([B A(:,2) A(:,3)])

deltaX1 = 10

**>>** X1=deltaX1/delta

X = 2

**>>** % Let’s get the determinant **deltaX2**

**>>** deltaX2= det([A(:,1) B A(:,3)])

deltaX2 = 15.000

**>> X2**=deltaX2/delta

X2 = 3.0000

**>>** % Let’s get the determinant **deltaX3**

>> deltaX3= det([A(:,1) A(:,2) B])

deltaX3 = 20

**>> X3**=deltaX3/delta

X3 = 4

**>> % Let’s calculate unknowns** х1, х2 та х3 in Octave using this way:

>> X=[deltaX1;deltaX2;deltaX3]/delta %solution

X =

 2.0000

 3.0000

 4.0000

**>>** % SUBSTITUTION:

**>>** % 2\*X1+3\*X2+4\*X3=29

**>>** % X1+X2+2\*X3=13

**>>** % 3\*X1+2\*X2+X3=16

>> A\*X % checking АХ=В

 29

 13

 16

**>>** % Let’s use **INVERSE MATRIX METHOD**

**>>** % X=A^(-1)\*B

**>>** X=inv(A)\*B

X =

 2.0000

 3.0000

 4.0000

**>>** % Let’s use the built-in function SOLVE

**>>** syms x1 x2 x3

**>>** [X1 X2 X3]=solve(2\*x1+3\*x2+4\*x3==29,X1+X2+2\*X3==13,3\*X1+2\*X2+X3==16)

x1 = (sym) 2

x2 = (sym) 3

x3 = (sym) 4

**Solve this system using** JORDAN-GAUSS METHOD **in your notes** (submit this photo).



