

Math 232, Gauss-Jordan Method for finding the inverse of a matrix

A =

1	4	-1
3	11	-8
-2	-4	23

I=eye(3)

I =

1	0	0
0	1	0
0	0	1

B=[A I]

B =

1	4	-1	1	0	0
3	11	-8	0	1	0
-2	-4	23	0	0	1

E=I;

E(2,1)=-3; E(3,1)=2

E =

1	0	0
-3	1	0
2	0	1

B=E*B

B =

1	4	-1	1	0	0
0	-1	-5	-3	1	0
0	4	21	2	0	1

E=I; E(3,2)=4

E =

1	0	0
0	1	0
0	4	1

B=E*B

B =

1	4	-1	1	0	0
0	-1	-5	-3	1	0
0	0	1	-10	4	1

E=I; E(2,3)=5; E(1,3)=1

E =

1	0	1
0	1	5
0	0	1

C=E*B

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C =
    1     4     0    -9     4     1
    0    -1     0   -53    21     5
    0     0     1   -10     4     1
C(2,:)= -C(2,:)
C =
    1     4     0    -9     4     1
    0     1     0    53   -21    -5
    0     0     1   -10     4     1
E=I; E(1,2)=-4
E =
    1    -4     0
    0     1     0
    0     0     1
C=E*C
C =
    1     0     0  -221    88    21
    0     1     0    53   -21    -5
    0     0     1   -10     4     1
Ai=C(:,4:6)
Ai =
   -221    88    21
    53   -21    -5
   -10     4     1
A*Ai
ans =
    1     0     0
    0     1     0
    0     0     1
[A I]
ans =
    1     4    -1     1     0     0
    3    11    -8     0     1     0
   -2    -4    23     0     0     1
B
B =
    1     4    -1     1     0     0
    0    -1    -5    -3     1     0
    0     0     1   -10     4     1
C
C =
    1     0     0  -221    88    21
    0     1     0    53   -21    -5
    0     0     1   -10     4     1

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[L,U]=lunp(A)
L =
     1     0     0
     3     1     0
    -2    -4     1
U =
     1     4    -1
     0    -1    -5
     0     0     1
inv(L)
ans =
     1.0000     0.0000     0.0000
    -3.0000     1.0000         0
   -10.0000     4.0000     1.0000

```