* 1. C=matrix(QQ,4,[-2,-5,-10,3,10,1,3,6,-2,-7,1,2,4,0,0,0,1,2,-3,-10])

print C

[ -2 -5 -10 3 10]

[ 1 3 6 -2 -7]

[ 1 2 4 0 0]

[ 0 1 2 -3 -10]

* 1. C.add\_multiple\_of\_row(1,2,-1)

C.add\_multiple\_of\_row(0,2,2)

C.swap\_rows(0,2)

print C

[ 1 2 4 0 0]

[ 0 1 2 -2 -7]

[ 0 -1 -2 3 10]

[ 0 1 2 -3 -10]

* 1. C.rref()

print C

[ 1 0 0 0 2]

[ 0 1 2 0 -1]

[ 0 0 0 1 3]

[ 0 0 0 0 0]

X1 =2, X2 = -1 + 2R, X3 = 2, X4 = 3, 0 =0

* 1. A=C.submatrix(0,0,4,4)

print A

[ -2 -5 -10 3]

[ 1 3 6 -2]

[ 1 2 4 0]

[ 0 1 2 -3]

* 1. A = 3\*A\*A.transpose()

print A

[ 414 -249 -156 -102]

[-249 150 93 63]

[-156 93 63 30]

[-102 63 30 42]

* 1. B=matrix(QQ,4,[1,0,0,0,0,1,0,0,0,0,1,0,0,0,0,1])

D=A-B

print B

print D

[1 0 0 0]

[0 1 0 0]

[0 0 1 0]

[0 0 0 1]

[ -3 -5 -10 3]

[ 1 2 6 -2]

[ 1 2 3 0]

[ 0 1 2 -4]