import numpy as np

from numpy import linalg

def gauss(a, b):

n = len(b)

for k in range(0,n-1):

for i in range(k+1,n):

if a[i,k] != 0.0:

lam = a[i,k]/a[k,k]

a[i,k+1:n]= a[i,k+1:n] - lam\*a[k,k+1:n]

b[i] = b[i] - lam\*b[k]

for k in range(n-1,-1,-1):

b[k] = (b[k] - np.dot(a[k,k+1:n],b[k+1:n]))/a[k,k]

return b

print(gauss(np.matrix([[1,2, -1],[3,4, 1], [5, 1, -3]]), np.matrix([[-3], [1], [-2]])))