E05 - ANN

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1 Gauss-Seidel - Implementação

```
from pprint import pprint
from numpy import array, diag, diagflat
from numpy import dot, linalg, triu, tril

def gauss_seidel(A,b,N,x):
    D = diagflat(diag(A))
    L = tril(A,-1)
    U = triu(-A,1)
    D_L  = D + L
    D_L_ = linalg.inv(D_L)

    for i in range(N):
        x = dot(D_L_, (dot(U,x) + b))
        print('X(%d) = '%(i+1),end='')
        print(x)
    return x

A = array([ [10.7 ,-2.3 , 2.4 ,-2.2 ,-0.9],
            [-0.7 ,12.6 , 2.7 ,-2.0 , 1.8],
            [ 1.1 , 1.0 ,11.1 ,-2.2 , 2.0],
            [-2.5 ,-1.4 , 0.3 , 9.5 , 2.4],
            [-2.1 , 1.2 ,-0.3 ,-1.5 , 7.5] ])

b     = array([3.8 , 1.6 , -4.4 , 1.9 ,  0.8])
chute = array([1.4 , -4.6 , 2.8 , 1.7 , -2.5])

sol = gauss_seidel(A,b,N=9,x=chute)
```

2 Resposta

```
A: array([[10.7, -2.3,  2.4, -2.2, -0.9],
          [-0.7, 12.6,  2.7, -2. ,  1.8],
          [ 1.1,  1. , 11.1, -2.2,  2. ],
          [-2.5, -1.4,  0.3,  9.5,  2.4],
          [-2.1,  1.2, -0.3, -1.5,  7.5]])

b: [3.8,  1.6, -4.4,  1.9,  0.8]

x: [0.6132759,0.27470273,-0.46492508,0.3446146,0.2847574]
```

Pontando, a resposta correta é o ***item c***