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Submeter até: 23/09/2019 23:59hs

Q1 Use o método iterativo de Gauss-Seidel, com estimativa inicial $X^{(1)} = [-3.8, -0.2, -2.3, -0.8, 2.9]$, para encontrar a aproximação $X^{(10)}$ da solução do sistema

$$\begin{cases} 9.7x_1 + 2.5x_2 - 0.7x_3 + 2.5x_4 + 1.7x_5 = -4.8 \\ 2.6x_1 + 9.7x_2 + 1.9x_3 - 2.0x_4 - 2.9x_5 = -3.8 \\ 0.7x_1 + 0.6x_2 + 13.9x_3 + 1.6x_4 - 2.3x_5 = -2.9 \\ 1.1x_1 + 0.5x_2 - 1.7x_3 + 5.5x_4 + 0.9x_5 = 3.6 \\ -2.6x_1 - 1.7x_2 + 3.0x_3 - 2.6x_4 + 11.1x_5 = -4.6 \end{cases}$$

a) $[-0.6255868, -0.10333189, -0.30999792, 0.74641515, -0.31745931]$ b) $[-0.62563754, -0.10338263, -0.31004866, 0.74636441, -0.31751005]$ ❖ $[-0.6266588, -0.10440389, -0.31106992, 0.74534315, -0.31853131]$ d) $[-0.62536054, -0.10310563, -0.30977166, 0.74664141, -0.31723305]$ e) $[-0.62560197, -0.10334706, -0.31001309, 0.74639998, -0.31747448]$ f) $[-0.62522724, -0.10297233, -0.30963836, 0.74677471, -0.31709975]$

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iterações:
X1
-3.8, -0.2, -2.3, -0.8, 2.9
X2
-0.91134021, 1.0051015, 0.36581851, 0.38396635, -0.48287883
X3
-0.74182502, -0.32976557, -0.28113889, 0.82500821, -0.36945122
X4
-0.57802441, -0.12209946, -0.33035066, 0.73959755, -0.30598441
X5
-0.62420796, -0.09871678, -0.30870105, 0.74301479, -0.31827186
X6
-0.62739934, -0.10507098, -0.31069258, 0.74562583, -0.31884271
X7
-0.62647828, -0.10456008, -0.31115602, 0.74534534, -0.31848916
X8
-0.62663307, -0.10437995, -0.31106522, 0.74533013, -0.31852594
X9
-0.62666258, -0.10440395, -0.31106703, 0.74534367, -0.31853286
X10 e resultado final:
-0.6266588, -0.10440389, -0.31106993, 0.74534315, -0.31853131
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a = [-3.8, -0.2, -2.3, -0.8, 2.9]

print("iterações:")

```
for i in range(1, 10):
    print(f"X{i}")
    print(*[round(i, 8) for i in a], sep=', ')
    a[0] = ((-2.5*a[1]+0.7*a[2]-2.5*a[3]-1.7*a[4]-4.8)/9.7)
    a[1] = ((-2.6*a[0]-1.9*a[2]+2.0*a[3]+2.9*a[4]-3.8)/9.7)
    a[2] = ((-0.7*a[0]-0.6*a[1]-1.6*a[3]+2.3*a[4]-2.9)/13.9)
    a[3] = ((-1.1*a[0]-0.5*a[1]+1.7*a[2]-0.9*a[4]+3.6)/5.5)
    a[4] = ((2.6*a[0]+1.7*a[1]-3.0*a[2]+2.6*a[3]-4.6)/11.1)
```

print("X10 e resultado final:")

print(*[round(i, 8) for i in a], sep=', ')