

## HW7

Solve the problem

$$4x_1 - x_2 - x_4 = 0$$

$$-x_1 + 4x_2 - x_3 - x_5 = -1$$

$$-x_2 + 4x_3 + x_5 - x_6 = 9$$

$$-x_1 + 4x_4 - x_5 - x_6 = 4$$

$$-x_2 - x_4 + 4x_5 - x_6 = 8$$

$$-x_3 - x_5 + 4x_6 = 6$$

by (a) Jacobi method, (b) Gauss-Seidel method, (c) SOR method, and (d) the conjugate gradient method.

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>>> ===== RESTART: D:/大學/大三下/數值方法/hw7/answer.py =====
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*(a)Jacobi
Solution: [1.174789 1.643174 2.448248 3.055981 3.949658 3.099476]
Iterations: 47

*(b)Gauss-Seidel
Solution: [1.174789 1.643174 2.448248 3.055981 3.949658 3.099476]
Iterations: 19

*(c)SOR Method (ω = 1.25)
Solution: [1.174789 1.643174 2.448248 3.055981 3.949658 3.099476]
Iterations: 25

*(d)Conjugate Gradient
Solution: [1.176567 1.642694 2.444333 3.060021 3.952608 3.099221]
Iterations: 1000

Exact solution to compare:
Solution: [1.174789 1.643174 2.448248 3.055981 3.949658 3.099476]
>>> |
```