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.

```
PS C:\Users\USER> & C:/Users/USER/AppData/Local/Microsoft/WindowsApps/python3.10.exe c:/
Final Solutions:
Jacobi:            [1.17478856 1.64317357 2.44824809 3.05598066 3.94965767 3.09947643]
Gauss-Seidel:      [1.17478855 1.64317358 2.44824809 3.05598066 3.94965767 3.09947644]
SOR (omega=1.25):  [1.17478857 1.64317359 2.44824808 3.05598068 3.94965767 3.09947644]
Conjugate Gradient: [1.17656665 1.64269366 2.44433267 3.06002082 3.95260785 3.09922059]
```