

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.

python3 mai...

Ask Assistant

3s • 4 minute

✦ Environment updated. Reloading shell...

Jacobi solution: [1.1747883 1.64317298 2.44824825 3.05598016 3.94965738 3.09947604] in 29 iterations

Gauss-Seidel solution: [1.17478836 1.64317351 2.44824812 3.05598056 3.94965762 3.09947644] in 13 iterations

SOR solution ($\omega=1.25$): [1.17478873 1.6431735 2.44824802 3.05598063 3.94965756 3.0994764] in 16 iterations

Conjugate Gradient solution: [1.17656665 1.64269366 2.44433267 3.06002082 3.95260785 3.09922059] in 1000 iterations