Prob.1
Solve the following set of simultaneous linear equations by the matrix inverse method.

(a) $2x + 3y - z = -10$,
$-x + 4y + 2z = -4$,
$2x - 2y + 5z = 35$
(b) $10x + 3y + 10z = 5$,
$8x - 2y + 9z = 2$,
$8x + y - 10z = 35$

Prob.2
Solve the following of simultaneous equations using Gauss elimination method

(a) $2x + y - 3z = 11$,
$4x - 2y + 3z = 8$,
$-2x + 2y - z = -6$
(b) $6x + 3y + 6z = 30$,
$2x + 3y + 3z = 17$,
$x + 2y + 2z = 11$
(c) $2x1 + x2 + x3 = 4$,
$3x2 - 3x3 = 0$,
$-x2 + 2x3 = 1$
(d) $x1 + 2x2 + 3x3 + 4x4 = 8$,
$2x1 - 2x2 - x3 - x4 = -3$,
$x1 - 3x2 + 4x3 - 4x4 = 8$,
$2x1 + 2x2 - 3x3 + 4x4 = -2$

Prob. 3
Solve the following of simultaneous equations using Gauss Jordan method

(a) $4x - 3y + 5z = 34$,
$2x - y - z = 6$,
$x + y + 4z = 15$
(b) $2x - y + z = -1$,
$3x + 3y + 9z = 0$,
$3x + 3y + 5z = 4$
(c) $x + y - z = 1$.
$x + 2y - 2z = 0$,
$-2x + y + z = 1$
(d) $x - y = 2$,
$-2x + 2y - z = -1$,
$y - 2z = 6$
(e) $x + y + z = 3$,
$2x + 3y + z = 6$,
$x - y - z = -3$

Prob. 4
Solve the following set of simultaneous linear equations using the Crout's method.

(a) $3x + 2y + 7z = 4$,
$2x + 3y + z = 5$,
$3x - 4y + z = 7$

(b) $x + y + z = 9$,
$2x - 3y + 4z = 13$,
$3x + y + 5z = 40$

(c) $2x + y - z = 6$,
$x - 3y + 5z = 11$,
$-x + 5y + 4z = 13$

Prob.5

Solve the following of simultaneous equations using Jacobi method

(a) $2x - y + 5z = 15$,
$2x + y + z = 7$,
$x + 3y + z = 10$

(b) $20x + y - 2z = 17$,
$3x + 20y - z = -18$,
$2x - 3y + 20z = 25$

(c) $5x + 2y + z = 12$,
$x + 4y + 2z = 15$,
$x + 2y + 5z = 20$

Prob.6

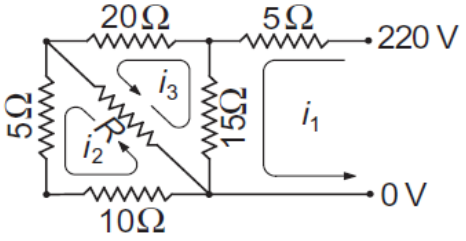
Solve the following of simultaneous equations using Gauss-Seidal method and Relaxation method

(a) $4x - 3y + 5z = 34$,
$2x - y - z = 6$,
$z + y + 4z = 15$

(b) $2x - y + 5z = 15$,
$2x + y + z = 7$,
$x + 3y + z = 10$

(c) $15x + 3y - 2z = 85$,
$2x + 10y + z = 51$,
$x - 2y + 8z = 5$

(d) $10x1 - 2x2 - x3 - x4 = 3$,
$-2x1 + 10x2 - x3 - x4 = 15$,
$-x1 - x2 + 10x3 - 2x4 = 27$,
$-x1 - x2 - 2x3 + 10x4 = -9$



The electrical network shown can be viewed as consisting of three loops. Applying Kirhoff's law (∑voltage drops = ∑ voltage sources) to each loop yields the following equations for the loop currents i_1, i_2, and i_3:

Compute the three loop currents for $R = 5$, 10, and 20 Ω.

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