

## SOME PRACTICE PROBLEMS

### JACOBI'S METHOD

I. Solve the following equations by Jacobi's method.

- 1)  $15x + y - z = 14$  ,  $x + 20y + z = 23$  ,  $2x - 3y + 18z = 35$
- 2)  $20x + y - 2z = 17$  ,  $3x + 20y - z = -18$  ,  $2x - 3y + 20z = 25$
- 3)  $8x - y + 2z = 13$  ,  $x - 10y + 3z = 17$  ,  $3x + 2y + 12z = 25$
- 4)  $5x - y + z = 10$  ,  $2x + 4y = 12$  ,  $x + 5y + 5z = -1$  . Start with  $(2, 3, 0)$  .
- 5)  $5x - y + z = 10$  ,  $2x + 4y = 12$  ,  $x + 5y + 5z = -1$
- 6)  $12x + 2y + z = 27$  ,  $2x + 15y - 3z = 16$  ,  $2x - 3y + 25z = 26$
- 7)  $4x + y + 3z = 17$  ,  $x + 5y + z = 14$  ,  $2x - y + 8z = 12$

### GAUSS - SEIDEL METHOD

II. Solve the following equations by Gauss-Seidel method.

- 1)  $28x + 4y - z = 32$  ,  $2x + 17y + 4z = 35$  ,  $x + 3y + 10z = 24$
- 2)  $54x + y + z = 110$  ,  $2x + 15y + 6z = 72$  ,  $-x + 6y + 27z = 85$
- 3)  $10x - 5y - 2z = 3$  ,  $4x - 10y + 3z = -3$  ,  $x + 6y + 10z = -3$
- 4)  $27x + 6y - z = 85$  ,  $6x + 15y + 2z = 72$  ,  $x + y + 54z = 110$
- 5)  $5x - y = 9$  ,  $-x + 5y - z = 4$  ,  $-y + 5z = -6$
- 6)  $5x + y - z = 10$  ,  $2x + 4y + z = 14$  ,  $x + y + 8z = 20$
- 7)  $10x_1 + x_2 + x_3 = 12$  ,  $2x_1 + 10x_2 + x_3 = 13$  ,  $2x_1 + 2x_2 + 10x_3 = 14$   
by taking three iterations only.
- 8)  $4x - 2y - z = 40$  ,  $x - 6y + 2z = -28$  ,  $x - 2y + 12z = -86$
- 9)  $2x - 4y + 49z = 49$  ,  $43x + 2y + 25z = 23$  ,  $3x + 53y + 3z = 91$
- 10)  $10x_1 - 5x_2 - 2x_3 = 3$  ,  $4x_1 - 10x_2 + 3x_3 = -3$  ,  $x_1 + 6x_2 - 10x_3 = -3$   
by taking three iterations only.
- 11)  $20x + y - 2z = 17$  ,  $3x + 20y - z = -18$  ,  $2x - 3y + 20z = 25$
- 12)  $25x + 2y - 3z = 48$  ,  $3x + 27y - 2z = 56$  ,  $x + 2y + 32z = 52$ .  
Start with  $(1, 1, 0)$ .