Exercise Problems:

1. Solve the following equations by Gauss elimination method :

$$x+4y-z=-5; \quad x+y-6z=-12; \quad 3x-y-z=4$$

2. Solve the following equations by Gauss elimination method :

$$x+y+z=6; \quad 3x+3y+4z=20; \quad 2x+y+3z=13$$

3. Solve the following equations by Gauss elimination method :

$$2x+2y+z=12; \quad 3x+2y+2z=8; \quad 5x+10y-8z=10$$

4. Solve the following equations by Gauss elimination method :

$$5x-y-2z=142; \quad x-3y-z=-30; \quad 2x-y-3z=5$$

5. Solve the following equations by Gauss elimination method :

$$2x+4y+z=3; \quad 3x+2y-2z=-2; \quad x-y+z=6$$

6. Solve the following system of equations by Gauss-elimination method

   x +2y + 3z =10; x + 3y – 2z = 7; 2x – y + z =5.

7. Solve 3x + 9y – 2z = 11; 4x + 2y + 13z = 24 and 4x – 2y +z = -8 by Gauss-elimination method.
8. Solve the following equations by Gauss- Jordon Method x + 2y + z = 8; 2x + 3y + 4z =20; 4x +3y + 2z = 16.
9. Solve the following equations by Gauss- Jordon Method 2x + y + z = 10; 3x + 2y +3z = 18; x + 4y + 9z = 16.
10. Solve by Gauss-Jordan method $x_1+ 3x_2-2x_3+ 2x_5= 0;2x_1+ 6x_2-5x_3-2x_4+ 4x_5-3x_6=-15;x_3+ 10x_4+ 15x_6= 5;2x_1+ 6x_2+ 8x_4+ 4x_5+ 18x_6= 6$
11. Solve the following equations by Gauss-Seidel iteration method x + y + 4z = 9; 8x – 3y +2z = 20; 4x + 11y – z =33.
12. Solve the following equations by Gauss-Seidel iteration method 4x + y + 2z = 4; 3x + 5y + z = 7; x + y + 3z =3.
13. Solve the following equations by Jacobi iteration method 10x + y + z =12; 2x + 10y +z = 13; 2x + 2y + 10z = 14.
14. Solve the following equations by Jacobi iteration method x + y + 4z = 9; 8x – 3y + 2z = 20; 4x + 11y – z =33.
15. Solve the equation $5x-y+3z=10, 3x+6y=18, x+y+5z=-10$ by Jacobi iteration method with (3, 0, -2) as initial approximation to the solution.
16. Solve the following equations by LU decomposition method 2x + y + 4 = 16; 3x + 2y + z = 10; x + 3y + 3z = 16.
17. Solve the following equations by LU decomposition method 2x + 3y +z = 9; x + 2y + 3z = 6; 3x + y + 2z = 8.
18. Solve the following equations by LU decomposition method 2x – 3y + 10z = 3; -x + 4y +2z = 20; 5x + 2y + z = -12.
19. Solve the following equations by LU decomposition method 5x – 2y + z = 4; 7x + y - 5z = 8; 3x + 7y - 4z = 10.

20. Solve the following equations by LU decomposition method $2x + 2y + z = 12$; $3x + 2y + 2z = 8$; $5x + 10y – 8z = 10$.