1. Plot the following system of linear equations and comment on solvability:
    i. $5x_1 - 4x_2 = -10$
        $-x_1 + x_2 = 2$

    ii. x - 2y = 1
        3x - 6y = 3

    iii. x - 2y = 1
         3x - 6 Y = 11

    iv. $x_1 - x_2 = 2$
        $2x_1 + 2x_2 = 1$
        $3x_1 + x_2 = 6$

    v. $13x_1 - 4x_2 + 2x_3 = 1$
        $-4x_1 + 11x_2 - 2x_3 = 2$
        $2x_1 - 2x_2 + 8x_3 = 6$

    vi. $x_1 + 2x_2 + 3x_3 = 6$
        $2x_1 + 5x_2 + 2x_3 = 4$
        $6x_1 - 3x_2 + 1x_3 = 2$

2. A beverage company has two production sites A and B and they want to transport their beverage to two distributors C and D. The demand from distributor C is 542 bottles per week, and the demand from distributor D is 422 bottles per week. The supply from production site A is 475 bottles per week, and the supply from production site B is 489 bottles per week. We want to know if these sites produce enough beverage to satisfy the demands from the distributors. Formulate this problem as a system of linear equations.

3. An investor will invest a total of $15,000 in two accounts, one paying 4% annual simple interest and the other 3%. If he wants to earn $550 annual interest, how much should he invest at each rate?

4. Solve the following system of equation using Gaussian elimination, LU factorization and QR factorization:
    i) $x_1 + 3x_2 - 2x_3 = -4$
       $3x_1 + 7x_2 + x_3 = 4$
       $-2x_1 + x_2 + 7x_3 = 7$

5. Set the seed at 4865299. Create a 4x3 matrix M by generating values from uniform (0,1). Solve the system of equations Mx = b, where b = (1,2,3,4) using Gaussian elimination, LU decomposition and QR factorization.