REVIEW QUESTIONS

Module 7: Systems of Linear Equations

1. List **two analytical methods** for solving a system of simultaneous linear equations. Comment on their practical use in solving systems of order higher than 3.

2. Given the system of linear equations $\begin{pmatrix} 1 & -3 \\ 3 & -5 \end{pmatrix}\begin{pmatrix} x_1 \\ x_2 \end{pmatrix} = \begin{pmatrix} 1 \\ 2 \end{pmatrix}$,

   (a) Find the inverse of the matrix of coefficients.

   (b) Solve the system using the inverse matrix you have obtained.

   (c) Solve the system using Cramme'r rule.

3. What are the main differences between the programmable Gaussian elimination method and the elimination method learnt at pre-university level?

4. Working throughout with six decimal places apply the programmable Gaussian elimination method on the following system of linear equations.

$$\begin{pmatrix} 7 & 2 & 1 \\ 1 & 5 & 2 \\ 1 & 2 & 3 \end{pmatrix}\begin{pmatrix} x_1 \\ x_2 \\ x_3 \end{pmatrix} = \begin{pmatrix} 3.8 \\ 4.2 \\ 3.4 \end{pmatrix}$$

   Use the equation $9x_1 + 9x_2 + 6x_3 = 11.4$ to check on the accuracy of your numerical solution.