Linear System:

\[ \begin{align*}
  x_1 - 2x_2 - 4x_3 &= 7 \\
  2x_1 - 3x_2 - 6x_3 &= 5 \\
  -3x_1 + 6x_2 + 15x_3 &= 0
\end{align*} \]

On separate paper, solve the above linear system by the following **matrix methods**.

1) Gaussian Elimination with Back-Substitution.

2) Gauss-Jordan Elimination
   (You can start with the row-echelon form from Gaussian Elimination you did in the previous method)

3) Finding and using the inverse matrix and solve the system in matrix form (Ax = b).

4) Using elementary matrices to find LU-factorization of the coefficient matrix A and using it to solve the system.

**Remark:** You may use calculators to help crunch numbers, but must show all the steps on how you are using each method. On the exam, there will be no graphing calculators (You should have a scientific calculator).