Problem #1:

Determine whether the set \( \{ v_1, v_2, v_3 \} \) is linearly independent or linearly dependent, where

\[
v_1 = \begin{bmatrix} 1 \\ 2 \\ 3 \end{bmatrix}, \quad v_2 = \begin{bmatrix} 2 \\ -1 \\ 4 \end{bmatrix}, \quad \text{and} \quad v_3 = \begin{bmatrix} 0 \\ 5 \\ 2 \end{bmatrix}.
\]

Please see Example 2, page 73.
Consider the system of equations

\begin{align*}
    x_1 + 2x_2 &= -1 \\
    2x_1 + 5x_2 &= -10.
\end{align*}

(a) Use the algorithm to find the inverse of the coefficient matrix \( A \).

(b) Use the inverse to calculate the solution of the system.

Please see example 3, page 97.