

(1) [5] Solve the following system of equation using Gaussian or Gauss-Jordan elimination.

$$6x + y = 8$$

$$x - 3y = -5$$

$$2x + y = 2$$

(2) [5] Compute $3\mathbf{BC} - 2\mathbf{A}$, where

$$\mathbf{A} = \begin{bmatrix} -1 & 3 \\ 3 & 1 \end{bmatrix} \quad \mathbf{B} = \begin{bmatrix} 2 & -1 & 1 \\ 0 & -2 & 5 \end{bmatrix} \quad \mathbf{C} = \begin{bmatrix} -2 & 1 \\ 3 & 5 \\ 5 & -2 \end{bmatrix}$$

(3) [5] Determine \mathbf{A}^{-1} where $\mathbf{A} = \begin{bmatrix} -1 & 3 \\ 3 & 1 \end{bmatrix}$.