

Use the matrices given below for problem #1.

$$A = \begin{bmatrix} 1 & 2 & 3 \\ 2 & 1 & 4 \end{bmatrix}$$

$$C = \begin{bmatrix} 3 & -1 & 3 \\ 4 & 1 & 5 \\ 2 & 1 & 3 \end{bmatrix}$$

$$E = \begin{bmatrix} 2 & -4 & 5 \\ 0 & 1 & 4 \\ 3 & 2 & 1 \end{bmatrix}$$

$$B = \begin{bmatrix} 1 & 0 \\ 2 & 1 \\ 3 & 2 \end{bmatrix}$$

$$D = \begin{bmatrix} 3 & -2 \\ 2 & 4 \end{bmatrix}$$

$$F = \begin{bmatrix} -4 & 5 \\ 2 & 3 \end{bmatrix}$$

1. (a)  $3D + 2F$

(b)  $(A - B)^T$

2. Is the matrix  $\begin{bmatrix} 4 & 1 \\ 0 & -3 \end{bmatrix}$  a linear combination of the matrices  $\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$  and  $\begin{bmatrix} 1 & 0 \\ 0 & 0 \end{bmatrix}$ ? Justify your answer.