Answers to even-numbered problems

Asst. 1

1.1 #2: $x = 1$, $y = 2$, $z = -2$.

1.2 #4: $C + E = E + C = \begin{bmatrix} 5 & -5 & 8 \\ 4 & 2 & 9 \\ 5 & 3 & 4 \end{bmatrix}$; $A + B$ is not defined; $D - F = \begin{bmatrix} 7 & -7 \\ 0 & 1 \end{bmatrix}$; $-3C + 5O = \begin{bmatrix} -9 & 3 & -9 \\ -12 & -3 & -15 \\ -6 & -3 & -9 \end{bmatrix}$; $2C - 3E = \begin{bmatrix} 0 & 10 & -9 \\ 8 & -1 & -2 \\ -5 & -4 & 3 \end{bmatrix}$; $2B + F$ is not defined.

1.3 #24: first column of AB is $1 \begin{bmatrix} 1 \\ 2 \\ 3 \end{bmatrix} + 3 \begin{bmatrix} -2 \\ 4 \\ 0 \end{bmatrix} + 2 \begin{bmatrix} -1 \\ 3 \\ -2 \end{bmatrix}$; second column of AB is $-1 \begin{bmatrix} 1 \\ 2 \\ 3 \end{bmatrix} + 2 \begin{bmatrix} -2 \\ 4 \\ 0 \end{bmatrix} + 4 \begin{bmatrix} -1 \\ 3 \\ -2 \end{bmatrix}$.

Asst. 2

2.1 #8: (a) $x = 1 - t$, $y = 2$, $z = 1$, $w = t$, where t is any real number; (b) $x = 1 - t$, $y = 2 + t$, $z = t - 1$, $w = t$, where t is any real number.

2.1 #14: I did this one in class. There are no solutions when $a = -2$, and infinitely many solutions when $a = 2$. When a is neither 2 nor -2 there is a unique solution.

2.2 #2: (a) $E = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & -2 & 0 & 0 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}$ (b) $E = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 3 & 1 \end{bmatrix}$ (c)$E = \begin{bmatrix} 0 & 0 & 1 & 0 \\ 0 & 1 & 0 & 0 \\ 1 & 0 & 0 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}$.