3.4

HW #9

Necole Goodman

33.

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

$A + B = \begin{bmatrix} 3 & 0 \\ -1 & 5 \end{bmatrix}$

$|A+B| = 3(5) - (-1)(0)$

$|A+B| = \underline{15}$

$|A| = 1(2) - 1(1)$

$|A| = 1$

$|B| = 2(3) - (-2)(-1)$

$|B| = 4$

$|A| + |B| = \underline{5}$

$\therefore |A+B| \neq |A| + |B|$

34.

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

$|A+B| = \begin{bmatrix} 4 & 4 \\ 4 & 4 \end{bmatrix}$

$= 4(4) - 4(4)$

$= 0$

$|A| = (1)(1) - 3(3)$

$= -8$

$|B| = 3(3) - 1(1)$

$= 8$

$|A| + |B| = 0$

$\therefore |A+B| = |A| + |B|$

39. $x + 2y = 2$

$2x + 5y = 0$

$A = \begin{bmatrix} 1 & 2 \\ 2 & 5 \end{bmatrix} = 1(5) - 2(2) = 1$

$A_1 = \begin{bmatrix} 2 & 2 \\ 0 & 5 \end{bmatrix} = 2(5) - 0(2) = 10$

$A_2 = \begin{bmatrix} 1 & 2 \\ 2 & 0 \end{bmatrix} = 1(0) - 2(2) = -4$

$x_1 = \frac{A_1}{A} = \frac{10}{1} = 10$

$x_2 = \frac{A_2}{A} = \frac{-4}{1} = -4$

$\boxed{x = 10, \ y = -4}$

W is a subspace of V, W is a vector space