Hence
$$-9-7x-15x^2 = -2(2+x+4x^2)+1(1-x+3x^2)-2(3+2x+5x^2)$$

Qu

Question Which of the following are linear combination

$$A=\begin{bmatrix}4 & 0\\ -2 & -2\end{bmatrix}, B=\begin{bmatrix}1 & -1\\ 2 & 3\end{bmatrix}, C=\begin{bmatrix}0 & 2\\ 1 & 4\end{bmatrix}$$

(a) $\begin{bmatrix}6 & -8\\ -1 & -8\end{bmatrix}$

Solution:

Linear Combination is

$W = K_1U + K_2V$

$$\begin{bmatrix}6 & -8\\ -1 & -8\end{bmatrix} = k_1\begin{bmatrix}4 & 0\\ -2 & -2\end{bmatrix} + k_2\begin{bmatrix}1 & -1\\ 2 & 3\end{bmatrix} + k_3\begin{bmatrix}0 & 2\\ 1 & 4\end{bmatrix}$$

$6 = 4k_1 + k_2 \rightarrow (1)$

$-8 = -k_2 + 2k_3 \rightarrow (2)$

$-1 = -2k_1 + 2k_2 + k_3 \rightarrow (3)$

$-8 = -2k_1 + 3k_2 + 4k_3 \rightarrow (4)$

Adding eq (1) and (2)

$6 = 4k_1 + k_2$

$-8 = -k_2 + 2k_3$

$-2 = 4k_1 + 2k_3 \rightarrow (5)$