Hence $K_1 = 2, K_2 = 2$ there is solution $(2,2)$ exists for a system of equations linear combination is

$$2,2,2) = 2(0,-2,2) + 2(1,3,-1)$$

Ans

⑨ Express the following Linear Combination $P_1 = 2 + x + 4x^2$, $P_2 = 1 - x + 3x^2$ and $P_3 = 3 + 2x + 5x^2$

a) $-9 - 7x - 15x^2$

Solution

Linear Combination is

$$w = K_1 U + K_2 V$$

$$-9 - 7x - 15x^2 = K_1(2 + x + 4x^2) + K_2(1 - x + 3x^2) + K_3(3 + 2x + 5$$

$$-9 = 2K_1 + K_2 + 3K_3 \rightarrow ①$$

$$-7 = K_1 - K_2 + 2K_3 \rightarrow ②$$

$$-15 = 4K_1 + 3K_2 + 5K_3 \rightarrow ③$$

The equation can be written in matrix

$$\left[\begin{array}{ccc:c} 2 & 1 & 3 & -9 \\ 1 & -1 & 2 & -7 \\ 4 & 3 & 5 & -15 \end{array}\right]$$

we use Gauss - Jordan method to find coefficient K_1, K_2 and K_3