선형대수학 03분반 / 22000202 김현승

chapter 4-5

5판 6번

$$\left\{ \begin{bmatrix} 3a+6b-c \\ 6a-2b-2c \\ -9a+5b+3c \\ -3a+b+c \end{bmatrix} : a,b,c \text{ in } R \right\}$$

$$\begin{bmatrix} 3 \\ 6 \\ -9 \\ -3 \end{bmatrix} a + \begin{bmatrix} 6 \\ -2 \\ 5 \\ 1 \end{bmatrix} b + \begin{bmatrix} -1 \\ -2 \\ 3 \\ 1 \end{bmatrix} c$$

$$a \times \frac{1}{3} = c$$

$$\text{basis} = \left\{ \begin{bmatrix} 3 \\ 6 \\ -9 \\ -3 \end{bmatrix} \begin{bmatrix} 6 \\ -2 \\ 5 \\ 1 \end{bmatrix} \right\}$$

$$\dim H = 2$$

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chapter 4-6

5판 4번

$$A\begin{bmatrix} 1 & 1 & -3 & 7 & 9 & -9 \\ 1 & 2 & -4 & 10 & 13 & -12 \\ 1 & -1 & -1 & 1 & 1 & -3 \\ 1 & -3 & 1 & -5 & -7 & 3 \\ 1 & -2 & 0 & 0 & -5 & 4 \end{bmatrix} B \begin{bmatrix} 1 & 1 & -3 & 7 & 9 & -9 \\ 0 & 1 & -1 & 3 & 4 & -3 \\ 0 & 0 & 0 & 1 & -1 & -2 \\ 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$$

$$\mathrm{Col}A = \left\{ \begin{bmatrix} 1 \\ 1 \\ 1 \\ 1 \\ 1 \end{bmatrix}, \begin{bmatrix} 1 \\ 2 \\ -1 \\ -3 \\ -2 \end{bmatrix}, \begin{bmatrix} 7 \\ 10 \\ 1 \\ -5 \\ 0 \end{bmatrix} \right\}$$

$$\mathrm{Row}A = \{(1,1,-3,7,9,-9), (0,1,-1,3,4,-3), (0,0,0,1,-1,-2)\}$$

$$B \sim \begin{bmatrix} 1 & 0 & -2 & 4 & 5 & -6 \\ 0 & 1 & -1 & 3 & 4 & -3 \\ 0 & 0 & 0 & 1 & -1 & -2 \\ 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix} \sim \begin{bmatrix} 1 & 0 & -2 & 0 & 9 & 2 \\ 0 & 1 & -1 & 0 & 7 & 3 \\ 0 & 0 & 0 & 1 & -1 & -2 \\ 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$$

$$x_1 - 2x_3 + 9x_5 + 2x_6 = 0 \qquad x_1 = 2x_3 - 9x_5 - 2x_6$$

$$x_2 - x_3 + 7x_5 + 3x_6 = 0 \qquad x_2 = x_3 - 7x_5 - 3x_6$$

$$x_4 - x_5 + 2x_6 = 0 \qquad x_4 = x_5 + 2x_6$$

$$\begin{bmatrix} 2x_3 - 9x_5 - 2x_6 \\ x_3 - 7x_5 - 3x_6 \\ x_3 \\ x_5 + 2x_6 \\ x_5 \\ x_6 \end{bmatrix}$$

$$\text{Nul}\,A = \left\{ \begin{bmatrix} 2 \\ 1 \\ 1 \\ 0 \\ 0 \\ 0 \end{bmatrix}, \begin{bmatrix} -9 \\ -7 \\ 0 \\ 1 \\ 1 \\ 0 \end{bmatrix} \begin{bmatrix} -2 \\ -3 \\ 0 \\ 2 \\ 0 \\ 1 \end{bmatrix} \right\}$$

5판 11번

8 x 5 2-dimensional

5 - 2 = 3

row A = 3