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Offering : A

1. Tentukan Penyelesaian SPL
$$\begin{cases} x - 3y + 2z = 1 \\ 2y + z = -3 \\ -4x + 3y - z = 2 \end{cases}$$

2. Tentukan matriks eselon baris dari SPL
$$\begin{cases} 2w - x + 4y + z = 0 \\ -3x + y - 2z = 1 \\ w + x - y + 3z = 2 \\ x + z = 0 \end{cases}$$

$$1. \quad [A] = \left(\begin{array}{ccc|c} 1 & -3 & 2 & 1 \\ 0 & 2 & 1 & -3 \\ -4 & 3 & -1 & 2 \end{array} \right)$$

$$R_2 = \frac{1}{2}R_2 \rightarrow \left(\begin{array}{ccc|c} 1 & -3 & 2 & 1 \\ 0 & 1 & \frac{1}{2} & -\frac{3}{2} \\ -4 & 3 & 1 & 2 \end{array} \right)$$

$$R_3 = 4R_1 + R_3 \rightarrow \left(\begin{array}{ccc|c} 1 & -3 & 2 & 1 \\ 0 & 1 & \frac{1}{2} & -\frac{3}{2} \\ 0 & -9 & 7 & 6 \end{array} \right)$$

$$R_3 = 9R_2 + R_3 \rightarrow \left(\begin{array}{ccc|c} 1 & -3 & 2 & 1 \\ 0 & 1 & \frac{1}{2} & -\frac{3}{2} \\ 0 & 0 & \frac{23}{2} & -\frac{15}{2} \end{array} \right)$$

$$R_3 = (\frac{2}{23})R_3 \rightarrow \left(\begin{array}{ccc|c} 1 & -3 & 2 & 1 \\ 0 & 1 & \frac{1}{2} & -\frac{3}{2} \\ 0 & 0 & 1 & -\frac{5}{11} \end{array} \right)$$

$$z = -\frac{5}{11}$$

$$y + \frac{z}{2} = -\frac{3}{2} \rightarrow y + \left(-\frac{5/11}{2}\right) = -\frac{3}{2} + \frac{5}{22} = \frac{27}{22} \rightarrow y = \frac{15}{22}$$

$$x - 3y + 3z = 1 \rightarrow x - 3\left(\frac{27}{22}\right) + 2\left(-\frac{5}{11}\right) = 1$$

$$x - \frac{101}{22} = 1 \rightarrow x = \frac{1}{1} + \frac{101}{22} \rightarrow x = \frac{123}{22} = 5\frac{13}{22}$$

$$2. \quad [B] = \left(\begin{array}{cccc|c} 2 & 1 & 4 & 1 & 0 \\ 0 & -3 & 1 & -2 & 1 \\ 1 & 1 & -1 & 3 & 2 \\ 0 & 1 & 0 & 1 & 0 \end{array} \right)$$

$$R_3 = (-2)R_3 + R_1 \rightarrow \left(\begin{array}{cccc|c} 2 & 1 & 4 & 1 & 0 \\ 0 & -3 & 1 & -2 & 1 \\ 0 & -1 & 6 & -5 & -4 \\ 0 & 1 & 0 & 1 & 0 \end{array} \right)$$

$$R_4 = (3)R_4 + R_2 \rightarrow \left(\begin{array}{cccc|c} 2 & 1 & 4 & 1 & 0 \\ 0 & -3 & 1 & -2 & 1 \\ 0 & -1 & 6 & -5 & -4 \\ 0 & 0 & 1 & 1 & 1 \end{array} \right)$$

$$R_3 = 3R_3 + R_2 \rightarrow \left(\begin{array}{cccc|c} 2 & 1 & 4 & 1 & 0 \\ 0 & -3 & 1 & -2 & 1 \\ 0 & 0 & 19 & -17 & -11 \\ 0 & 0 & 1 & 1 & 1 \end{array} \right)$$

$$R_4 = (-19)R_4 + R_3 \rightarrow \left(\begin{array}{cccc|c} 2 & 1 & 4 & 1 & 0 \\ 0 & -3 & 1 & -2 & 1 \\ 0 & 0 & 19 & -17 & -11 \\ 0 & 0 & 0 & -36 & -30 \end{array} \right)$$

$$R_1 = \frac{1}{2}R_1$$

$$R_2 = -\frac{1}{3}R_2$$

$$R_3 = \frac{1}{19}R_3$$

$$R_4 = -\frac{1}{36}R_4$$

$$[B] = \left(\begin{array}{cccc|c} 1 & 1/2 & 2 & 1/2 & 0 \\ 0 & 1 & -1/3 & 2/3 & -1/3 \\ 0 & 0 & 1 & -17/19 & -11/19 \\ 0 & 0 & 0 & 1 & 5/6 \end{array} \right)$$