Nama : Johanes Yoagan Ue

Nim : 215314105

1. $$\begin{cases} 2\sin a - \cos\beta + 3\tan\gamma = 3 \\ 4\sin a + 2\cos\beta - 2\tan\gamma = 2 \\ 6\sin a - 3\cos\beta + \tan\gamma = 9 \end{cases}$$

Jawaban :

$$\begin{bmatrix} 2 & -1 & 3 & 3 \\ 4 & 2 & -2 & 2 \\ 6 & -3 & 1 & 9 \end{bmatrix} \xrightarrow{\frac{1}{2}R1} \begin{bmatrix} 1 & -\frac{1}{2} & \frac{3}{2} & \frac{3}{2} \\ 4 & 2 & -2 & 2 \\ 6 & -3 & 1 & 9 \end{bmatrix} \xrightarrow{R2-(4)R1}$$

$$\begin{bmatrix} 1 & -\frac{1}{2} & \frac{3}{2} & \frac{3}{2} \\ 0 & 4 & -8 & -4 \\ 6 & -3 & 1 & 9 \end{bmatrix} \xrightarrow{\frac{1}{4}R2} \begin{bmatrix} 1 & -\frac{1}{2} & \frac{3}{2} & \frac{3}{2} \\ 0 & 1 & -2 & 1 \\ 6 & -3 & 1 & 9 \end{bmatrix} \xrightarrow{R3-(6)R1}$$

$$\begin{bmatrix} 1 & -\frac{1}{2} & \frac{3}{2} & \frac{3}{2} \\ 0 & 1 & -2 & 1 \\ 0 & 0 & -8 & 0 \end{bmatrix} \xrightarrow{-\frac{1}{8}R3} \begin{bmatrix} 1 & -\frac{1}{2} & \frac{3}{2} & \frac{3}{2} \\ 0 & 1 & -2 & 1 \\ 0 & 0 & 1 & 0 \end{bmatrix} \xrightarrow{R1-(-\frac{1}{2})R2}$$

$$\begin{bmatrix} 1 & 0 & \frac{1}{2} & 1 \\ 0 & 1 & -2 & 1 \\ 0 & 0 & 1 & 0 \end{bmatrix} \xrightarrow{R1-(\frac{1}{2})R3} \begin{bmatrix} 1 & 0 & 0 & 1 \\ 0 & 1 & -2 & 1 \\ 0 & 0 & 1 & 0 \end{bmatrix} \xrightarrow{R2-(-2)R3}$$

Date: /

$$\left[\begin{array}{ccc|c} 1 & 0 & 0 & 1 \\ 0 & 1 & 0 & -1 \\ 0 & 0 & 1 & 0 \end{array}\right] \longrightarrow \begin{cases} x(\alpha) = 1 \\ y(\beta) = -1 \\ z(\gamma) = 0 \end{cases}$$

↳ Usando Gauss Jordan

② $$\begin{cases} x_1 + 450 = x_2 + 610 \\ x_2 + 520 = x_3 + 480 \\ x_3 + 390 = x_4 + 600 \\ x_4 + 640 = x_1 + 310 \end{cases}$$

Jordan

$$\begin{cases} x_1 - x_2 + 0 + 0 = 160 \\ 0 + x_2 - x_3 + 0 = -40 \\ 0 + 0 + x_3 - x_4 = 210 \\ -x_1 + 0 + 0 + x_4 = -330 \end{cases}$$

$$\left[\begin{array}{cccc|c} 1 & -1 & 0 & 0 & 160 \\ 0 & 1 & -1 & 0 & -40 \\ 0 & 0 & 1 & -1 & 210 \\ -1 & 0 & 0 & 1 & -330 \end{array}\right] \begin{array}{l} \\ \\ \\ R_4 - (-1)R_1 \end{array} \left[\begin{array}{cccc|c} 1 & 0 & -1 & 0 & 120 \\ 0 & 1 & -1 & 0 & -40 \\ 0 & 0 & 1 & -1 & 210 \end{array}\right]$$

Date: /

$$\begin{bmatrix} 1 & -1 & 0 & 0 & 160 \\ 0 & 1 & -1 & 0 & -40 \\ 0 & 0 & 1 & -1 & 210 \\ 0 & -1 & 0 & 1 & -170 \end{bmatrix} \xrightarrow{R1-(-1)R2} \begin{bmatrix} 1 & 0 & -1 & 0 & 120 \\ 0 & 1 & -1 & 0 & -40 \\ 0 & 0 & 1 & -1 & 210 \\ 0 & -1 & 0 & 1 & -170 \end{bmatrix}$$

$$\xrightarrow{R1-(-1)R3} \begin{bmatrix} 1 & 0 & 0 & -1 & 330 \\ 0 & 1 & -1 & 0 & -40 \\ 0 & 0 & 1 & -1 & 210 \\ 0 & -1 & 0 & 1 & -170 \end{bmatrix} \xrightarrow{R4-(-1)R2}$$

$$\begin{bmatrix} 1 & 0 & 0 & -1 & 330 \\ 0 & 1 & -1 & 0 & -40 \\ 0 & 0 & 1 & -1 & 210 \\ 0 & 0 & -1 & 1 & -210 \end{bmatrix} \xrightarrow{R4-(-1)R3} \begin{bmatrix} 1 & 0 & 0 & -1 & 330 \\ 0 & 1 & -1 & 0 & -40 \\ 0 & 0 & 1 & -1 & 210 \\ 0 & 0 & 0 & 0 & 0 \end{bmatrix}$$

$$\xrightarrow{R2-(-1)R3} \begin{bmatrix} 1 & 0 & 0 & -1 & 330 \\ 0 & 1 & 0 & -1 & 170 \\ 0 & 0 & 1 & -1 & 210 \\ 0 & 0 & 0 & 0 & 0 \end{bmatrix} \xrightarrow{R1-(330)R4}$$

$$\begin{bmatrix} 1 & 0 & 0 & 1 & 330 \\ 0 & 1 & 0 & -1 & 170 \\ 0 & 0 & 1 & -1 & 210 \\ 0 & 0 & 0 & 0 & 0 \end{bmatrix} \xrightarrow{R2-(170)R4} \begin{bmatrix} 1 & 0 & 0 & 1 & 330 \\ 0 & 1 & 0 & 0 & 170 \\ 0 & 0 & 1 & -1 & 210 \\ 0 & 0 & 0 & 0 & 0 \end{bmatrix}$$

Date: /

$R_3 - (210)\, R_4$

$$\begin{bmatrix} 1 & 0 & 0 & 0 & 330 \\ 0 & 1 & 0 & 0 & 170 \\ 0 & 0 & 1 & 0 & 210 \\ 0 & 0 & 0 & 0 & 0 \end{bmatrix} \rightarrow \begin{cases} x(x_1) = 330 \\ x(x_2) = 170 \\ z(x_3) = 210 \\ = 0 \end{cases}$$

↳ Metode Gauss Jordan