17) $\left(\begin{array}{ccc|c} 1 & 5 & 7 & 3 \\ 4 & 5 & 7 & 3 \\ 0 & 1 & 1 & 1 \end{array}\right) \overset{-4\Sigma_1}{\simeq} \left(\begin{array}{ccc|c} 1 & 5 & 7 & 3 \\ 0 & -15 & -21 & -9 \\ 0 & 1 & 1 & 1 \end{array}\right) \simeq \left(\begin{array}{ccc|c} 1 & 5 & 7 & 3 \\ 0 & 7 & 1.4 & 0.6 \\ 0 & 1 & 1 & 1 \end{array}\right) /15 \simeq$

$\simeq \left(\begin{array}{ccc|c} 1 & 0 & 0 & 0 \\ 0 & 1 & 1.4 & 0.6 \\ 0 & 0 & -0.4 & 0.4 \end{array}\right) \overset{-5_2}{\underset{-5_1}{\simeq}} \left(\begin{array}{ccc|c} 1 & 0 & 0 & 0 \\ 0 & 1 & 1.4 & 0.6 \\ 0 & 0 & 1 & -1 \end{array}\right) /-0.4 \simeq$

$\simeq \left(\begin{array}{ccc|c} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 2 \\ 0 & 0 & 1 & -1 \end{array}\right) -1.4\Sigma_2$

$\begin{cases} x_1 = 0 \\ x_2 = 2 \\ x_3 = -1 \end{cases}$

$$P = \begin{pmatrix} 1 & 5 & 7 \\ 4 & 5 & 7 \\ 0 & 1 & 1 \end{pmatrix} \qquad P^T = \begin{pmatrix} 1 & 4 & 0 \\ 5 & 5 & 1 \\ 7 & 7 & 1 \end{pmatrix}$$

$$P \cdot P^T = \begin{pmatrix} 75 & 78 & 12 \\ 78 & 90 & 12 \\ 12 & 12 & 2 \end{pmatrix}$$

$$A = \begin{pmatrix} 1 & 5 & 7 \\ 4 & 5 & 7 \\ 0 & 1 & 1 \end{pmatrix} \qquad A^T = \begin{pmatrix} 1 & 4 & 0 \\ 5 & 5 & 1 \\ 7 & 7 & 1 \end{pmatrix}$$

$$A \cdot A^T = \begin{pmatrix} 75 & 78 & 12 \\ 78 & 90 & 12 \\ 12 & 12 & 2 \end{pmatrix}$$

$$A = \begin{pmatrix} 1 \\ 4 \\ 0 \end{pmatrix} x_1 + \begin{pmatrix} 5 \\ 5 \\ 1 \end{pmatrix} x_2 + \begin{pmatrix} 7 \\ 7 \\ 1 \end{pmatrix} x_3 = \begin{pmatrix} 3 \\ 3 \\ 1 \end{pmatrix}$$

$$\begin{cases} x_1 + 5x_2 + 7x_3 = 3 \\ 4x_1 + 5x_2 + 7x_3 = 3 \\ x_2 + x_3 = 1 \end{cases}$$

$$\begin{cases} 5x_1 = 0 \\ x_2 + x_3 = 1 \end{cases} \quad \begin{cases} x_1 = 0 \\ x_2 + x_3 = 1 \end{cases}$$

$$\begin{cases} x_1 + 5x_2 + 7x_3 = 3 \\ x_2 + x_3 = 1 \quad | \cdot 5 \end{cases} \quad \begin{cases} x_1 + 5x_2 + 7x_3 = 3 \\ 5x_2 + 5x_3 = 5 \end{cases} \quad \ominus$$

$$\begin{cases} -x_1 - 2x_3 = 2 \\ x_1 = 0 \end{cases} \quad \begin{cases} 0 - 2x_3 = 2 \quad | \cdot (-2) \\ x_1 = 0 \end{cases} \quad \begin{cases} x_3 = -1 \\ x_1 = 0 \end{cases}$$

$$\begin{cases} x_1 = 0 \\ x_2 = 2 \\ x_3 = -1 \end{cases}$$