

a)

$$\begin{array}{c|ccc} x & y & z & \\ \hline 2 & 6 & 1 & 7 \\ 1 & 2 & -1 & -1 \\ 5 & 7 & -4 & 9 \end{array} \rightarrow \begin{array}{c|ccc} z & x & y & \\ \hline 1 & 2 & 6 & 7 \\ -1 & 1 & 2 & -1 \\ -4 & 5 & 7 & 9 \end{array}$$

$$\begin{array}{c|ccc} z & x & y & \\ \hline 1 & 2 & 6 & 7 \\ 0 & 3 & 8 & 6 \\ 0 & 13 & 31 & 37 \end{array} \begin{array}{l} \leftarrow F_1 + F_2 \\ \leftarrow 4F_1 + F_3 \end{array}$$

$$\begin{array}{c|ccc} z & x & y & \\ \hline 1 & 2 & 6 & 7 \\ 0 & 1 & 8/3 & 2 \\ 0 & 0 & -11/3 & 11 \end{array} \begin{array}{l} \leftarrow F_2 = F_2/3 \\ \leftarrow F_3 = -13F_2 + F_3 \end{array}$$

$$\begin{array}{c|ccc} z & x & y & \\ \hline 1 & 2 & 6 & 7 \\ 0 & 1 & 8/3 & 2 \\ 0 & 0 & 1 & -3 \end{array} \leftarrow F_3 = \frac{-3}{11} F_3$$

$$\underline{y = -3} //$$

$$x + \frac{8y}{3} = 2$$

$$x + \frac{8(-3)}{3} = 2$$

$$\underline{x = 10} //$$

$$z + 2x + 6y = 7$$

$$z + 2(10) + 6(-3) = 7$$

$$z + 2 = 7$$

$$\underline{z = 5} //$$

$$b) \begin{array}{c} \begin{matrix} & z & x & y \\ \begin{matrix} 3 \\ 1 \\ 2 \end{matrix} & \begin{bmatrix} 2 & -3 & 0 & | & 8 \\ 4 & -5 & 1 & | & 15 \\ 2 & 0 & 4 & | & 1 \end{bmatrix} \end{matrix} \rightarrow \begin{array}{c} \begin{matrix} & z & x & y \\ \begin{matrix} 3 \\ 1 \\ 2 \end{matrix} & \begin{bmatrix} 1 & 4 & -5 & | & 15 \\ 4 & 2 & 0 & | & 1 \\ 0 & 2 & -3 & | & 8 \end{bmatrix} \end{matrix}\end{array}$$

$$\begin{array}{c} \begin{matrix} & z & x & y \\ \begin{matrix} 3 \\ 1 \\ 2 \end{matrix} & \begin{bmatrix} 1 & 4 & -5 & | & 15 \\ 0 & -14 & 20 & | & -59 \\ 0 & 2 & -3 & | & 8 \end{bmatrix} \end{matrix} \quad F_2 = -4F_1 + F_2$$

$$\begin{array}{c} \begin{matrix} & z & x & y \\ \begin{matrix} 3 \\ 1 \\ 2 \end{matrix} & \begin{bmatrix} 1 & 4 & -5 & | & 15 \\ 0 & 1 & -10/7 & | & 59/14 \\ 0 & 0 & -1/7 & | & -3/7 \end{bmatrix} \end{matrix} \quad \begin{matrix} F_2 = F_2 / -14 \\ F_3 = -2F_2 + F_3 \end{matrix}$$

$$\begin{array}{c} \begin{matrix} & z & x & y \\ \begin{matrix} 3 \\ 1 \\ 2 \end{matrix} & \begin{bmatrix} 1 & 4 & -5 & | & 15 \\ 0 & 1 & -10/7 & | & 59/14 \\ 0 & 0 & 1 & | & 3 \end{bmatrix} \end{matrix} \quad \leftarrow F_3 = F_3(-7) \quad \frac{3}{7}(-7)$$

$$\frac{-1}{7}(-7) \quad \underline{y=3} \quad \underline{x=8.5}$$

$$x + y\left(\frac{-10}{7}\right) = \frac{59}{14} \quad \underline{z = -4}$$

$$x - \frac{30}{7} = \frac{59}{14}$$

$$x = 17/2$$

$$\underline{z = -4}$$

read.

$$z + 4x - 5y = 15$$

$$z + 4(8.5) - 5(3) = 15$$

$$z + 34 - 15 = 15 \quad z = 15 - 19$$

$$z + 9 = 15$$

$$\textcircled{C} \quad \begin{array}{ccc} & 2 & 1 & 3 \\ & x & y & z \\ \begin{array}{l} 1 \\ 3 \\ 2 \end{array} & \left[\begin{array}{ccc|c} 1 & 1 & -1 & 2 \\ 3 & 3 & 1 & 2 \\ 1 & 0 & 1 & 0 \end{array} \right] & \rightarrow & \begin{array}{ccc} y & x & z \\ \left[\begin{array}{ccc|c} 1 & 1 & -1 & 2 \\ 0 & 1 & 1 & 0 \\ 3 & 3 & 1 & 2 \end{array} \right] \end{array} \end{array}$$

$$\begin{array}{ccc} y & x & z \\ \left[\begin{array}{ccc|c} 1 & 1 & -1 & 2 \\ 0 & 1 & 1 & 0 \\ 0 & 0 & 4 & -4 \end{array} \right] & F_3 = -3F_1 + F_3 & \\ & -3(-1) + 1 & \end{array}$$

$$\begin{array}{ccc} y & x & z \\ \left[\begin{array}{ccc|c} 1 & 1 & -1 & 2 \\ 0 & 1 & 1 & 0 \\ 0 & 0 & 1 & -1 \end{array} \right] & F_3 = F_3 / 4 & \\ & -3(2) + 1 & \\ & -6 + 1 & \\ & -5 & \end{array}$$

$$\underline{z = -1} // \quad \underline{x = 1} // \quad \underline{y = 0} //$$

$$x + z = 0$$

$$x - 1 = 0$$

$$y + x - z = 2$$

$$y + 1 - (-1) = 2$$

$$y + 2 = 2$$