Cramer's rule —

* $\boxed{\Delta = 0 \text{ We can't Apply 'Cramers'.}}$

ex

$$
\begin{aligned}
x + 2y + 3z &= 6 \\
2x + 4y + z &= 7 \\
3x + 2y + 9z &= 14
\end{aligned}
$$

$$\Rightarrow \Delta = \begin{vmatrix} 1 & 2 & 3 \\ 2 & 4 & 1 \\ 3 & 2 & 9 \end{vmatrix} = \begin{vmatrix} 1 & 2 & 3 \\ 2 & 4 & 1 \\ 0 & -4 & 0 \end{vmatrix} = \begin{vmatrix} 1 & 2 & 3 \\ 2 & 0 & 1 \\ 0 & -4 & 0 \end{vmatrix}$$

$$= +4(1-6)$$

$$= -20$$

$$\Delta_1 = \begin{vmatrix} 6 & 2 & 3 \\ 7 & 4 & 1 \\ 14 & 2 & 9 \end{vmatrix} = \cancel{\begin{vmatrix} 6 & 2 & 3 \\ 7 & 4 & 1 \\ 8 & 0 & 6 \end{vmatrix}} \quad \cancel{\begin{vmatrix} 3 & 2 & 3 \\ 6 & 4 & 1 \\ 2 & 0 & 6 \end{vmatrix}}$$

$$= \begin{vmatrix} 6 & 2 & 3 \\ -5 & 0 & -5 \\ 8 & 0 & 6 \end{vmatrix} \qquad \cancel{= -10 + (-8)} \quad \cancel{= -18}$$

$$= -2(-30 + 40)$$
$$= -20$$

$$\boxed{\therefore x = \frac{\Delta_1}{\Delta} = \frac{-20}{-20} = 1}$$

$$\Delta_2 = \begin{vmatrix} 1 & 6 & 3 \\ 2 & 7 & 1 \\ 3 & 14 & 9 \end{vmatrix}$$

$$= \begin{vmatrix} 1 & 0 & 0 \\ 2 & -5 & -5 \\ 3 & -4 & 0 \end{vmatrix}$$

$$= -20$$

$$\boxed{\therefore y = \frac{\Delta_2}{\Delta} = \frac{-20}{-20} = 1}$$

$$\Delta_3 = \begin{vmatrix} 1 & 2 & 6 \\ 2 & 4 & 7 \\ 3 & 2 & 14 \end{vmatrix}$$

$$= \begin{vmatrix} 1 & 0 & 0 \\ 2 & 0 & -5 \\ 3 & -4 & -4 \end{vmatrix} = 1(-(20)) = -20$$

$$\boxed{\therefore z = \frac{\Delta_3}{\Delta} = \frac{-20}{-20} = 1}$$

So, ~~x08~~ $x = y = z = 1$