Key Takeaways

System of linear equations (Cramer's rule):

Three variables : Consider system of equations

$$\begin{aligned} a_1x + b_1y + c_1z &= d_1 \\ a_2x + b_2y + c_2z &= d_2 \\ a_3x + b_3y + c_3z &= d_3 \end{aligned} \qquad \Delta = \begin{vmatrix} a_1 & b_1 & c_1 \\ a_2 & b_2 & c_2 \\ a_3 & b_3 & c_3 \end{vmatrix}$$

For $(0,0,0)$

$$\begin{aligned} a_1x + b_1y + c_1z &= 0 \\ a_2x + b_2y + c_2z &= 0 \\ a_3x + b_3y + c_3z &= d_3 \end{aligned}$$

If d_1, d_2, d_3 all are zero simultaneously, then we have HOMOGENEOUS SYSTEM.

Note: $(x, y, z) = (0,0,0)$ is always a solution of this equation and it's called Trivial solution.

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