

$$\begin{cases} (1-a)x + y + z = 0 \\ 2x + (2-a)y + 2z = 0 \\ x + y + (1-a)z = 0 \end{cases}$$

SISTEMA OMOGENEO

$$D = \begin{vmatrix} 1-a & 1 & 1 \\ 2 & 2-a & 2 \\ 1 & 1 & 1-a \end{vmatrix} = (1-a)[(2-a)(1-a)-2] - 1[2(1-a)-2] + 1 \cdot [\cancel{2} - \cancel{2} + a] = (1-a)(2-2a-a+a^2-2) - \cancel{2} + \cancel{2} + a + 2 = (1-a)(a^2-3a) + 2a + 2 = a^2 - 3a - a^3 + 3a^2 + 2a + 2 = -a^3 + 4a^2 = -a^2(a-4)$$

se $a \neq 0$ e $a \neq 4$
ammette solo la

SOLUZIONE NULLA

$$x=0$$

$$y=0$$

$$z=0$$

• $a=0$

$$\begin{cases} x + y + z = 0 \\ 2x + 2y + 2z = 0 \\ x + y + z = 0 \end{cases}$$

$$A = \begin{vmatrix} 1 & 1 & 1 \\ 2 & 2 & 2 \\ 1 & 1 & 1 \end{vmatrix} = 0 \quad \kappa(A) = 1 \quad \kappa(A') = 1 \Rightarrow \infty^2 \text{ soluzioni}$$

$$\begin{cases} x = -y - z \\ y = y \\ z = z \end{cases}$$

• $a=4$

$$\begin{cases} -3x + y + z = 0 \\ 2x - 2y + 2z = 0 \\ x + y - 3z = 0 \end{cases}$$

$$A = \begin{vmatrix} -3 & 1 & 1 \\ 2 & -2 & 2 \\ 1 & 1 & -3 \end{vmatrix} \quad \begin{aligned} \kappa(A) &= 2 \\ \kappa(A') &= 2 \end{aligned}$$

$\Rightarrow$ ammette ∞^1 soluzioni

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

$$\begin{cases} -3x + y = -z \\ 2x - 2y = -2z \end{cases} \quad \text{si applica CRAMER}$$

$$D_1 = \begin{vmatrix} -z & 1 \\ -2z & -2 \end{vmatrix} = 2z + 2z = 4z$$

$$D_2 = \begin{vmatrix} -3 & -z \\ 2 & -2z \end{vmatrix} = 6z + 2z = 8z$$

$$\Rightarrow \begin{cases} x = z \\ y = 2z \\ z = z \end{cases}$$