RISOLVERE $\begin{cases} (1-h)x+(h-3)y=-1 \\ (4-h)y-z=0 \\ 3x-y+z=1 \end{cases}$

È un sistema 3×3 calcolo il determinante

$$D=\begin{vmatrix} 1-h & h-3 & 0 \\ 0 & 4-h & -1 \\ 3 & -1 & 1 \end{vmatrix} = (1-h)(3-h)-(h-3)(3)=(3-h)(1-h+3)$$
$$=(3-h)(4-h)$$

$\Rightarrow h\neq 3$ e $h\neq 4$ sistema possibile usando CRAMER

$$D_1=\begin{vmatrix} -1 & h-3 & 0 \\ 0 & 4-h & -1 \\ 1 & -1 & 1 \end{vmatrix} = -1(3-h)-(h-3)\cdot 1 = \cancel{-3}\cancel{+h}\cancel{-h}\cancel{+3}=0$$

$$D_2=\begin{vmatrix} 1-h & -1 & 0 \\ 0 & 0 & -1 \\ 3 & 1 & 1 \end{vmatrix} = (1-h)(1)+1(3)=1-h+3 = 4-h$$

$$D_3=\begin{vmatrix} 1-h & h-3 & -1 \\ 0 & 4-h & 0 \\ 3 & -1 & 1 \end{vmatrix} = (1-h)(4-h)+3(4-h)=(4-h)(4-h)$$

$x=0$; $y=1/(3-h)$; $z=(4-h)/(3-h)$.

se $\boxed{h=3}$ $\begin{cases} -2x=-1 \\ y-z=0 \\ 3x-y+z=1 \end{cases}$ $r(A)=2$ $A'=\begin{vmatrix} -2 & 0 & 0 & -1 \\ 0 & 1 & -1 & 0 \\ 3 & -1 & 1 & 1 \end{vmatrix}$ $r(A')=3$

$\Rightarrow$ IL SISTEMA È IMPOSSIBILE.

se $\boxed{h=4}$ $A=\begin{vmatrix} -3 & 1 & 0 \\ 0 & 0 & -1 \\ 3 & -1 & 1 \end{vmatrix}$ $r(A)=2$ $A'=\begin{vmatrix} -3 & 1 & 0 & -1 \\ 0 & 0 & -1 & 0 \\ 3 & -1 & 1 & 1 \end{vmatrix}$ $r(A')=2$

SISTEMA AMMETTE ∞^1 SOLUZIONI

$\begin{cases} -3x+y=-1 \\ z=0 \\ 3x-y+z=1 \end{cases}$ $\begin{cases} y=3x-1 \\ z=0 \\ -y+z=1-3x \end{cases}$ $\begin{cases} y=3x-1 \\ z=0 \end{cases}$ $\Rightarrow \begin{cases} x=x \\ y=3x-1 \\ z=0 \end{cases}$