

TROVARE UNA SOLUZIONE PARTICOLARE E UNA GENERALE DEL SEGUENTE SISTEMA LINEARE

$$X + y - z - 1 = 2x + 2y - 2z - 2 = x - y + z - 1 = 0$$

$$(1; \alpha; \alpha) \quad \text{oppure} \quad (1; 0; 0) + \alpha(0; 1; 1)$$

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$$\begin{cases} X + y - z - 1 = 0 \\ 2x + 2y - 2z - 2 = 0 \\ x - y + z - 1 = 0 \end{cases} \quad \begin{cases} X + y - z = 1 \\ 2x + 2y - 2z = 2 \\ x - y + z = 1 \end{cases}$$

$$\left(\begin{array}{ccc|c} 1 & 1 & -1 & 1 \\ 2 & 2 & -2 & 2 \\ 1 & -1 & 1 & 1 \end{array} \right)$$

$$\left(\begin{array}{ccc|c} 1 & 1 & -1 & 1 \\ 1 & -1 & 1 & 1 \\ 0 & 0 & 0 & 0 \end{array} \right) \quad \begin{array}{l} \pi_2 \rightarrow \pi_2 - \pi_1 \end{array}$$

$$\left(\begin{array}{ccc|c} 1 & 1 & -1 & 1 \\ 0 & -2 & 2 & 0 \\ 0 & 0 & 0 & 0 \end{array} \right) \quad \begin{array}{l} \pi_2 \rightarrow \frac{\pi_2}{2} \\ \pi_2 : 1 \quad -1 \quad 1 \quad 1 \\ -\pi_1 : -1 \quad -1 \quad 1 \quad -1 \\ \hline 0 \quad -2 \quad 2 \quad 0 \end{array}$$

$$\left(\begin{array}{ccc|c} 1 & 1 & -1 & 1 \\ 0 & -1 & 1 & 0 \\ 0 & 0 & 0 & 0 \end{array} \right)$$

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

$$\begin{cases} x = 1 \\ y = \alpha \\ z = \alpha \end{cases}$$

$$(1, \alpha, \alpha)$$

$$\alpha = 0$$

ALTRO MODO "SCORPORARE I
NUMERI DA α "

$$(1; 0; 0) + (0; \alpha; \alpha)$$

$$(1; 0; 0) + \alpha(0; 1; 1)$$

$$\begin{cases} X + y - z = 1 \\ 2X + 2y - 2z = 2 \\ X - y + z = 1 \end{cases}$$

$$\begin{cases} 1 = 1 \\ 2 = 2 \\ 1 = 1 \end{cases}$$

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$$\begin{cases} 2X + y - z = 1 \\ 4X + 2y - 2z = 2 \\ X + z = 0 \end{cases}$$

$$\left(\begin{array}{ccc|c} 2 & 1 & -1 & 1 \\ 4 & 2 & -2 & 2 \\ 1 & 0 & 1 & 0 \end{array} \right)$$

$$\begin{aligned} R_2 &\rightarrow R_2 - 2R_1 \\ R_3 &\rightarrow -2R_3 + R_1 \end{aligned}$$

$$\begin{array}{cccc} R_2 & 4 & 2 & -2 & 2 \\ -2R_1 & -4 & -2 & +2 & -2 \\ \hline & 0 & 0 & 0 & 0 \end{array}$$

$$\begin{array}{cccc} -2R_3 & -2 & 0 & -2 & 0 \\ & 2 & 1 & -1 & 1 \\ \hline & 0 & 1 & -3 & 1 \end{array}$$

$$\left(\begin{array}{ccc|c} 2 & 1 & -1 & 1 \\ 0 & 1 & -3 & 1 \\ 0 & 0 & 0 & 0 \end{array} \right)$$

$$\begin{cases} 2X + y - z = 1 \\ y - 3z = 1 \\ z = \alpha \end{cases}$$

$$\begin{cases} 2X + 1 + 3\alpha - \alpha = 1 \\ y = 1 + 3\alpha \\ z = \alpha \end{cases}$$

$$\begin{cases} 2X + 2\alpha = 0 \\ y = 1 + 3\alpha \\ z = \alpha \end{cases}$$

$$\begin{cases} X = -\alpha \\ y = 1 + 3\alpha \\ z = \alpha \end{cases}$$

$$\begin{pmatrix} -\alpha; 1+3\alpha; \alpha \end{pmatrix}$$

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OPPURE

$$\begin{pmatrix} 0; 1; 0 \end{pmatrix} + \begin{pmatrix} -\alpha; 3\alpha; \alpha \end{pmatrix}$$

$$\begin{pmatrix} 0; 1; 0 \end{pmatrix} + \alpha \begin{pmatrix} -1; 3; 1 \end{pmatrix}$$

$$\begin{cases} 2x + y - z = 1 \\ \textcircled{x} + z = 0 \\ 3x + y - 1 = 0 \end{cases} \quad \text{SOSTITUZIONE}$$

$$\begin{cases} 2(-z) + y - z = 1 \\ x = -z \\ 3(-z) + y - 1 = 0 \end{cases} \quad \begin{cases} y - 3z = 1 \\ x = -z \\ y - 3z = 1 \end{cases} \quad \text{UGUALI}$$

$$\begin{cases} y = 3z + 1 \\ x = -z \end{cases} \quad \begin{cases} y = 3\alpha + 1 \\ x = -\alpha \\ z = \alpha \end{cases}$$