

$$1) \begin{vmatrix} 1 & -3 & 1 \\ 2 & -6 & 2 \\ 3 & -9 & 3 \end{vmatrix} \cdot \begin{vmatrix} x_1 \\ x_2 \\ x_3 \end{vmatrix} = \begin{vmatrix} 0 \\ 0 \\ 0 \end{vmatrix}$$

$$\begin{vmatrix} 1 & -3 & 1 \\ 2 & -6 & 2 \\ 3 & -9 & 3 \end{vmatrix} \xrightarrow{-3L_1 + L_3} \begin{vmatrix} 1 & -3 & 1 \\ 2 & -6 & 2 \\ 0 & 0 & 0 \end{vmatrix} \xrightarrow{-2L_1 + L_2} \begin{vmatrix} 1 & -3 & 1 \\ 0 & 0 & 0 \\ 0 & 0 & 0 \end{vmatrix}, \text{ therefore } x_3 = c \rightarrow x_2 = b$$

$$x_1 - 3b + c = 0 \Rightarrow x_1 = 3b - c$$

$$\begin{vmatrix} x_1 \\ x_2 \\ x_3 \end{vmatrix} = \begin{vmatrix} 3b - c \\ c \\ b \end{vmatrix} = b \begin{vmatrix} 3 \\ 0 \\ 1 \end{vmatrix} + c \begin{vmatrix} -1 \\ 1 \\ 0 \end{vmatrix}, \text{ Given a base is data for each dot vectors, com dimensão 2:}$$

$$\begin{vmatrix} 3 \\ 0 \\ 1 \end{vmatrix}, \begin{vmatrix} -1 \\ 1 \\ 0 \end{vmatrix}$$