$$\left\{ \begin{bmatrix} 1 & -2 & 0 & -6 \\ 0 & 0 & 1 & 2 \\ 0 & 0 & 0 & 0 \end{bmatrix} \left| \begin{matrix} 0 \\ 0 \\ 0 \end{matrix} \right. \right\}$$

$x_1 - 2x_2 - 6x_4 = 0 \Rightarrow x_1 = 2w + 6t$

$x_2 = w$

$x_3 + 2x_4 = 0 \Rightarrow x_3 = -2x_4 = -2t$

$x_4 = t$

$$\Rightarrow \begin{pmatrix} x_1 \\ x_2 \\ x_3 \\ x_4 \end{pmatrix} = \begin{pmatrix} 2w + 6t \\ w \\ -2t \\ t \end{pmatrix}$$

$$= \begin{pmatrix} 2 \\ 1 \\ 0 \\ 0 \end{pmatrix} w + \begin{pmatrix} 6 \\ 0 \\ -2 \\ 1 \end{pmatrix} t$$

$$\begin{bmatrix} 1 & -2 & 0 & -1 & 3 \\ 0 & 0 & 1 & 2 & -2 \\ 0 & 0 & 0 & 0 & 0 \end{bmatrix} \left| \begin{matrix} 0 \\ 0 \\ 0 \end{matrix} \right. \right]$$

$x_1 = 2x_2 + x_4 - 3x_5 = 2c + b - 3a$

$x_2 = c$

$x_3 = -2x_4 + 2x_5 = -2b + 2a$

$x_4 = b$

$x_5 = a$

$$\begin{pmatrix} x_1 \\ x_2 \\ x_3 \\ x_4 \\ x_5 \end{pmatrix} = \begin{pmatrix} -3a + b + 2c \\ c \\ 2a - 2b \\ b \\ a \end{pmatrix}$$

$$= \Rightarrow \begin{bmatrix} -3 \\ 0 \\ 2 \\ 0 \\ 1 \end{bmatrix} a + \begin{bmatrix} 1 \\ 0 \\ -2 \\ 1 \\ 0 \end{bmatrix} b + \begin{bmatrix} 2 \\ 1 \\ 0 \\ 0 \end{bmatrix} c$$

Null(A) = span $\Rightarrow$ Nullity(A) = 3