

Source:

1 | Row Reduced Echelon Form

Null space is the same (because algebra). Then turn it into a system of equations and use those equations to find the null space.

2 | Factoring a vector

Say we have $\begin{pmatrix} -2x_3 - 4x_4 \\ -4x_3 - 7x_4 \\ x_3 \\ x_4 \end{pmatrix}$. Then you can write it as the linear combination

$$\begin{pmatrix} -2x_3 \\ -4x_3 \\ x_3 \\ 0 \end{pmatrix} + \begin{pmatrix} -4x_4 \\ -7x_4 \\ 0 \\ x_4 \end{pmatrix} = x_3 \begin{pmatrix} -2 \\ -4 \\ 1 \\ 0 \end{pmatrix} + x_4 \begin{pmatrix} -4 \\ -7 \\ 0 \\ 1 \end{pmatrix}$$