Question
Find the value of t for which the following system of equations is consistent, and find the general solution in that case.

$$\begin{aligned} w + 2x - y + 3z &= 5 \\ 2w + 4x + y + 5z &= 12 \\ 3w + 6x + 3y + 7z &= 19 \\ 7w + 14x + 2y + 18z &= t \end{aligned}$$

Answer
For consistency t = 41

$$\begin{pmatrix} 11 \\ 0 \\ 0 \\ -2 \end{pmatrix} + p \begin{pmatrix} -2 \\ 1 \\ 0 \\ 0 \end{pmatrix} + q \begin{pmatrix} -8 \\ 0 \\ 1 \\ 3 \end{pmatrix}$$