Step-1

The objective is to complete the statement, â€œNormally 4 â€œplaneâ€ in four dimensional space meet at a ____â€, and also find the combination of $(1,0,0,0),(1,1,0,0),(1,1,1,0),(1,1,1,1)$ which produce $b=(3,3,3,2)$.

Step-2

Consider the following expression,

$(1,0,0,0),(1,1,0,0),(1,1,1,0),(1,1,1,1)$

Produces $b=(3,3,3,2)$

Normally 4 planes in four-dimension space meet at a **point** (similar to 3 planes meeting in 3 dimension space at a point).

The combination of the 4 column vectors producing b is:

$$1\begin{pmatrix}1\\1\\1\\0\end{pmatrix}+2\begin{pmatrix}1\\1\\1\\1\end{pmatrix}=\begin{pmatrix}3\\3\\3\\2\end{pmatrix}$$

The system of linear equations this is satisfying is

$$\begin{aligned}x+y+z+t&=3\\y+z+t&=3\\z+t&=3\\t&=2\end{aligned}$$

The solution of the equation is given as following in matrix format:

$$\begin{bmatrix}0\\0\\1\\2\end{bmatrix}.$$