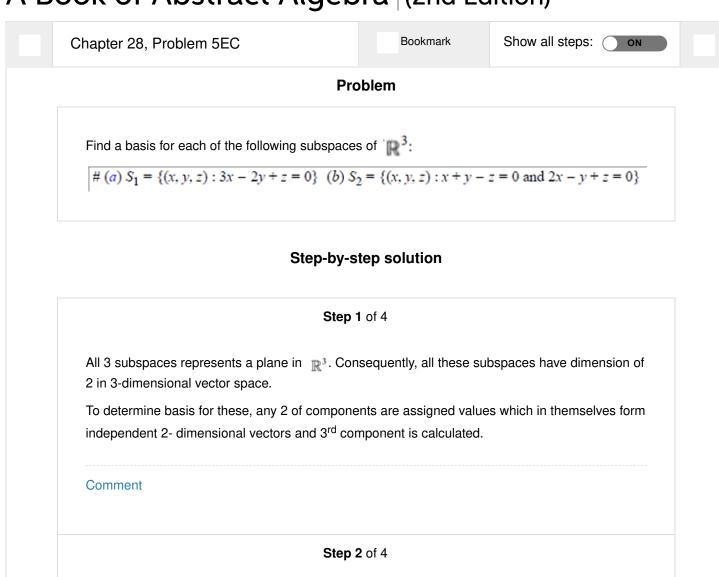
## A Book of Abstract Algebra (2nd Edition)

(a) Subspace is represented by 3x - 2y + z = 0



2 vectors with first 2 components being linearly independent are (x = 1, y = 0; x = 0, y = 1).

Substituting these in plane equation 3<sup>rd</sup> component of these 2 vector are obtained.

For 
$$(x = 1, y = 0)$$
,  $z = -3$ 

For 
$$(x = 0, y = 1)$$
,  $z = 2$ 

Hence basis for given subspace is 
$$\begin{pmatrix} 1 \\ 0 \\ -3 \end{pmatrix}$$
,  $\begin{pmatrix} 0 \\ 1 \\ 2 \end{pmatrix}$ 

Comment

## **Step 3** of 4

(b) Subspace is represented by x + y - z = 0

2 vectors with first 2 components being linearly independent are (x = 1, y = 0; x = 0, y = 1).

Substituting these in plane equation 3<sup>rd</sup> component of these 2 vector are obtained.

For 
$$(x = 1, y = 0)$$
,  $z = 1$ 

For 
$$(x = 0, y = 1)$$
,  $z = 1$ 

Hence basis for given subspace is  $\begin{pmatrix} 1 \\ 0 \\ 1 \end{pmatrix}$ ,  $\begin{pmatrix} 0 \\ 1 \\ 1 \end{pmatrix}$ 

Comment

## **Step 4** of 4

- (c) subspace is represented by 2x y + z = 0
- 2 vectors with first 2 components being linearly independent are (x = 1, y = 0; x = 0, y = 1).

Substituting these in plane equation 3<sup>rd</sup> component of these 2 vector are obtained.

For 
$$(x = 1, y = 0)$$
,  $z = -2$ 

For 
$$(x = 0, y = 1)$$
,  $z = 1$ 

	(1)	1	(0)
Hence basis for given subspa	ice is 0	,	1
	(-2)		(1)

.....

Comment